United States Department of the Interior

OFFICE OF THE SOLICITOR
Washington, D.C. 20240

1849-1999

IN REPLY REFER TO:

JAN 19 2001

Memorandum

To: Director, Fish and Wildlife Service

From: Solicitor

Subject: Application of the Migratory Bird Treaty Act Beyond Three Nautical Miles From the U.S. Coastline

The Migratory Bird Treaty Act (MBTA) implements a series of bilateral agreements between the United States and neighboring countries that require the parties to protect migratory birds. The MBTA prohibits, through criminal sanctions, the taking, possession, sale, transportation, etc., of birds protected by the treaties. 16 U.S.C. § 703. Nothing in the MBTA expressly deals with the geographic scope of its application.

You asked us to provide an opinion on whether the MBTA can be applied beyond the three nautical mile (NM) territorial sea of the United States. For the reasons that follow, we have concluded that the MBTA can be enforced extraterritorially against (a) United States citizens for acts taken in U.S. waters beyond three NMs and in international waters, and (b) citizens of any country for acts taken on U.S.-flagged vessels in U.S. waters beyond three NMs and international waters.

As a preliminary matter, we note that, like all generally applicable U.S. laws, the MBTA applies within the three-NM territorial sea of the United States. The 1982 United Nations Convention on the Law of the Sea permits coastal States to claim up to a twelve-NM territorial sea and a 200-NM exclusive economic zone (EEZ) from baselines determined in accordance with the Convention. This opinion does not address whether the Presidential Proclamations regarding the U.S. assertion of a twelve-NM territorial sea and a 200-NM EEZ apply to the MBTA. See footnote 7, infra. If they did, the MBTA would apply to all persons within those respective areas.

As used in this opinion, therefore, "U.S. waters beyond three NMs" refers to the U.S. territorial sea from three to twelve miles and the U.S. EEZ. "International waters" is used to refer to waters beyond the territorial jurisdiction or EEZ of any sovereign. "International waters" is preferred here to the term "high seas" to avoid confusion stemming from the latter term's evolving meaning. "High seas" has traditionally referred to waters outside the territorial jurisdiction of any sovereign, see Restatement (Third) of the Foreign Relations Law of the United States § 521 cmt. a, and it is used in that context in reference to case law discussed below; however, the term's more current usage is to refer to waters outside the EEZ of any sovereign. This opinion takes no position on whether the MBTA may apply within the EEZ of another country; should the issue arise, we would address it in consultation with the State Department.

I. PRESUMPTION AGAINST EXTRATERRITORIAL APPLICATION

"Congress has the authority to enforce its laws beyond the territorial boundaries of the United States. Whether Congress has in fact exercised that authority [in a particular statute] is a matter of statutory construction." EEOC v. Arabian American Oil Co., 499 U.S. 244, 248 (1991) (ARAMCO) (citation omitted). To provide guidance on such questions of construction, the U.S. Supreme Court has created and applied a general presumption that "legislation of Congress, unless a contrary intent appears, is meant to apply only within the territorial jurisdiction of the United States." Foley Bros., Inc. v. Filardo, 336 U.S. 281, 285 (1949). This presumption operates in civil actions, see, e.g., Smith v. United States, 507 U.S. 197, 203-04 (1993) (Federal Tort Claims Act does not apply in Antarctica), and criminal actions, see United States v. Mitchell, 553 F.2d 996, 1002 (5th Cir. 1977) (Marine Mammal Protection Act does not apply in territorial waters of foreign nation); see also United States v. Bowman, 260 U.S. 94, 98 (1922) (acknowledging application of presumption to some criminal statutes). Overcoming the presumption requires a "clear expression" of congressional intent. ARAMCO, 499 U.S. at 248; Steele v. Bulova Watch Co., 344 U.S. 280, 285 (1952); Foley Bros., 336 U.S. at 285.

II. *BOWMAN*: LIMITED EXCEPTION FOR SOME CRIMINAL CASES

The Supreme Court has also created an exception to the presumption against extraterritorial application for a certain type of criminal statute. When the "nature of the offense" mandates that the statute be read to reach outside the territory of the United States, the Court finds it appropriate to infer extraterritorial application even absent express direction from Congress. United States v. Bowman, 260 U.S. 94 (1922). In that case, the Supreme Court considered whether it was appropriate to extend federal criminal jurisdiction extraterritorially in the case of fraud against a federally-owned corporation. The Court recognized two types of criminal prohibition, and held that the presumption applies to the first, but not the second type.

> Crimes against private individuals or their property, like assaults, murder, burglary, larceny, robbery, arson, embezzlement, and frauds of all kinds, which must affect the peace and good order of the community must, of course, be committed within the territorial jurisdiction of the government where it may properly exercise it. If punishment of them is to be extended to include those committed outside of the strict territorial jurisdiction, it is natural for Congress to say so in the statute, and failure to do so will negative the purpose of Congress in this regard. . . .
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> But the same rule of interpretation should not be applied to criminal statutes which are, as a class, not logically dependent on their locality for the government's jurisdiction, but are enacted because of the right of the government to defend itself against obstruction or fraud wherever perpetrated, especially if committed by its own citizens, officers, or agents. Some such offenses can only be committed within the territorial jurisdiction of the government because of the local acts required to constitute them. Others are such that to limit their locus to the strictly territorial jurisdiction would be greatly to curtail the

> scope and usefulness of the statute and leave open a large immunity for frauds as easily committed by citizens on the high seas and in foreign countries as at home. In such cases, Congress has not thought it necessary to make specific provision in the law that the locus shall include the high seas and foreign countries, but allows it to be inferred from the nature of the offense.

Id. at 98. Thus, the Court held that the presumption against extraterritorial application did not apply to criminal statutes to protect the government itself. Some such statutes cannot by definition apply to actions outside of the U.S., but others cannot be effective without extraterritorial application. Statutes in the latter category can be applied to actions beyond U.S. territory even without the express direction of Congress. In Bowman, the Court concluded that the statute at issue should be applied extraterritorially.[1]

Bowman may be viewed as an exception to the presumption against extraterritorial application, and hence to the requirement that there be a clear expression of congressional intent. That is, "if the nature of the law does not mandate its extraterritorial application [i.e., the Bowman exception does not apply], then a presumption arises against such application. To overcome the presumption and to apply the statute beyond the territory of the United States, the Government must show a clear expression of congressional intent." United States v. Mitchell, 553 F.2d 996, 1002 (5th Cir. 1977) (citations omitted).

III. APPLICATION OF THE *BOWMAN* EXCEPTION TO THE MBTA IN INTERNATIONAL WATERS

As noted earlier, while the MBTA implements a series of bilateral agreements between the United States and neighboring countries, nothing in its text expressly deals with the geographic scope of its application. This means that there is no "clear expression" of congressional intent to overcome the presumption against extraterritorial application, if that presumption applies to the MBTA. Therefore, the MBTA may be applied extraterritorially only if it falls within the ambit of the Bowman exception to that presumption.

The Supreme Court has not had occasion to address the extraterritorial application of a criminal statute since Bowman. Although the "defense of government" rationale might seem to place severe limits on Bowman's scope, lower courts have shown a willingness to apply that rationale expansively or to ignore this portion of Bowman completely. In cases where the courts have

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[1] The facts of Bowman made it relatively easy for the Court to infer extraterritorial application: The crime was fraud against the United States Shipping Board Emergency Fleet Corporation, a corporation owned entirely by the United States. The Court reasoned that fraud against a shipping enterprise was likely to be committed either at sea or in a foreign port, so Congress must have intended extraterritorial application. In addition, the law was enacted to protect the government itself, not to protect individuals or their property. Id. at 98.

discussed the interests of the federal government at all, they have generally given Bowman a broad scope. For example, in Stegeman v. United States, 425 F.2d 984 (9th Cir.), cert. denied, 400 U.S. 837 (1970), the Ninth Circuit appeared to equate "defense of government" with "important interests of government." Thus, because bankruptcy laws preventing concealment of assets were "enacted to serve important interests of government, not merely to protect individuals who might be harmed by the prohibited conduct," extraterritorial intent was appropriately inferred. Id. at 986; see also United States v. Aguilar, 883 F.2d 662 (9th Cir. 1989) (immigration conspiracy), cert. denied, 498 U.S. 1046 (1991); United States v. Larsen, 952 F.2d 1099, 1100-01 (9th Cir. 1991) (drug trafficking).[2]

The MBTA does not clearly implicate "the right of the Government to defend itself." Bowman, 260 U.S. at 98. However, like the bankruptcy laws at issue in Stegeman, protection of migratory birds is an "important interest of government" that has long been recognized at the highest levels of the government. See Missouri v. Holland, 252 U.S. 416, 435 (referring to the MBTA: "Here a national interest of very nearly the first magnitude is involved.").

Most courts engaging in a Bowman analysis have concentrated on the second prong of the test, asking whether failure to apply the statute extraterritorially would greatly curtail that statute's usefulness. If the answer is yes, they have found it unnecessary to find a threat to the government. See United States v. Baker, 609 F.2d 134, 137 (5th Cir. 1980) ("The nature of the enactment here in question mandates an extraterritorial application under the second category [i.e., curtailing the statute's usefulness] described in Bowman."). Courts have found this to be the case in laws relating to customs, Brulay v. United States, 383 F.2d 345, 350 (9th Cir.) (conspiracy to smuggle), cert. denied, 389 U.S. 986 (1967); United States v. Walczak, 783 F.2d 852 (9th Cir. 1986) (false statements on customs forms); immigration, United States v. Castillo-Felix, 539 F.2d 9, 13 (9th Cir. 1976) (inducing aliens to enter the United States); drug trafficking, United States v. Baker, supra; and child pornography, United States v. Thomas, 893 F.2d 1066, 1068-69 (9th Cir.), cert. denied, 498 U.S. 826 (1990).

Like the statutes at issue in those cases, the effectiveness of the MBTA would be greatly curtailed if it applies only in United States territory. Many of the birds protected by the MBTA, such as the northern fulmar, see, e.g., Convention for the Protection of Migratory Birds, Aug. 16, 1916, U.S.-Great Britain (for Canada), art. I, para. 3 (including fulmars, as well as a variety of other pelagic birds, in the list of protected migratory birds), spend most of their lives on or over international waters. If the scope of the MBTA does not extend this far, the MBTA will provide little or no protection to such birds, despite its express goal of protecting them.

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[2] Courts in a number of cases also have applied Bowman to statutes that required no expansion of the "defense of government" rationale. E.g., United States v. Layton, 855 F.2d 1388 (9th Cir. 1988) (attempting to murder member of Congress), cert. denied, 489 U.S. 1046 (1989); United States v. Cotten, 471 F.2d 744 (9th Cir.) (conspiracy to steal government property), cert. denied, 411 U.S. 936 (1973).

Moreover, both the treaty with Japan and the treaty with Russia protect only birds that migrate between those countries and the United States. Convention for the Protection of Migratory Birds, Mar. 4, 1972, U.S.-Japan, art. II, para. 1(a); Convention Concerning the Conservation of Migratory Birds, Nov. 19, 1976, U.S.-U.S.S.R., art. I, para. 1(a). As neither of these countries share a land border (or an extensive border between territorial waters) with the United States, such migration requires that the birds fly over international waters. If the MBTA is not interpreted to apply in international waters, there will be a gap in the protection of the birds that were the subject of these treaties.[3]

Threats to migratory birds in international waters have gained increasing national and international attention. For example, in 1989, the United Nations banned large-scale high seas driftnets, G.A. Res. 44-225, in part to reduce seabird bycatch; the United States implemented this resolution in the High Seas Driftnet Fisheries Enforcement Act, 16 U.S.C. § 1826 et seq.; see also 50 C.F.R. 679.24(e) (regulations under the Magnuson-Stevens Act, 16 U.S.C. § 1801 et seq., imposing gear and procedure requirements to reduce seabird bycatch in particular U.S. fishery). These important but narrow limitations are insufficient to address the many threats facing seabirds protected by the MBTA in international waters.

A number of recent decisions have added a third element to the Bowman analysis: namely, that extraterritorial application of the statute at issue be consistent with the principles of international law. See, e.g., United States v. Vasquez-Velasco, 15 F.3d 833, 839-41 (9th Cir. 1994). International law principles require, in turn, that there be a recognized basis for the assertion of jurisdiction. See Chua v. United States, 730 F.2d 1308, 1312 (9th Cir. 1984), cert. denied, 470 U.S. 1031 (1985); Restatement (Third) of the Foreign Relations of the United States § 402 (1987) (Restatement).

The interpretation of the MBTA set forth in this Opinion is entirely consistent with principles of international law. First, application of the MBTA to those (including foreign nationals) aboard U.S.-flagged vessels is consistent with international law. See Restatement (Third) of the Foreign Relations Law of the U.S. § 502 (1986) ("The flag state may exercise jurisdiction to prescribe, to

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[3] Moreover, the treaty with Russia expressly contemplated extraterritorial application of the parties' respective implementing legislation to areas (presumably including those in international waters) designated as especially important to bird conservation. See Convention Concerning the Conservation of Migratory Birds, Nov. 19, 1976, U.S.-U.S.S.R., art. IV, para. 3. Although the U.S. and Russia have not yet designated any such areas, if they did so, the U.S. would be to required to assert extraterritorial jurisdiction in such areas "to the maximum extent possible." Id. The MBTA should be interpreted as broad enough to allow this. The Supreme Court has expressly recognized that Congress could, and did in the MBTA, provide more protection to migratory birds than required by the underlying treaties. Andrus v. Allard, 444 U.S. 51, 62 n.18 (1979). Thus, the United States need not wait until such an area is designated to assert jurisdiction over actions taken in international waters.

adjudicate, and to enforce, with respect to the ship or any conduct that takes place on the ship.") Second, application of the MBTA to United States citizens (whether or not on U.S.-flagged vessels) in international waters also is consistent with international law, as nationality is an accepted basis for jurisdiction. See Thomas, 893 F.2d at 1069 (prosecution of United States citizen for acts of child pornography occurring in Mexico was consistent with international law); Restatement § 402(2); cf. Skiriotes v. Florida, 313 U.S. 69, 73 (1941) ("the United States is not debarred by any rule of international law from governing the conduct of its own citizens upon the high seas or even in foreign countries when the rights of other nations or their nationals are not infringed").[4]

In fact, it is the MBTA's international genesis that makes application of the Bowman exception to it particularly appropriate. The MBTA was designed to implement international agreements to protect migratory birds. These treaties were necessary because individual countries proved unable to protect migratory birds without international cooperation: Birds do not respect political boundaries, whether on land or sea. In this context, it is reasonable to assume that Congress intended the MBTA to apply as broadly as would be consistent with international law.

Few courts have engaged in a Bowman analysis and then refused to give the statute in question extraterritorial effect; therefore, the outer limits of the application of Bowman have not been well defined. The Second Circuit has distinguished Bowman and applied the presumption against extraterritorial application (1) where U.S. criminal laws were enforced against foreign citizens for acts taken in foreign territory, United States v. Pizzarusso, 388 F.2d 8 (2d Cir.) (falsification of visa application; court applied presumption but found clear expression of congressional intent to overcome it and approved extraterritorial application), cert. denied, 392 U.S. 936 (1968), and (2) in civil actions, Kollias v. D&G Marine Maintenance, 29 F.3d 67 (2d Cir. 1994) (Longshore and Harbor Workers' Compensation Act not intended to apply extraterritorially), cert. denied, 260 U.S. 94 (1995).[5]

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[4] Vasquez-Velasco suggests that to be consistent with international law, the extraterritorial exercise of jurisdiction must be reasonable. 15 F.3d at 840. We believe the limited extraterritorial application described in this Opinion is reasonable as against U.S. citizens and foreign nationals on U.S.-flagged vessels. Moreover, Restatement § 403(1) indicates that the exercise of jurisdiction must be reasonable only "with respect to a person or activity having connections with another state." Enforcement of the MBTA against United States citizens in international waters would not appear to implicate another state.

[5] The Kollias opinion noted two recent Supreme Court decisions that have refused to uphold extraterritorial application and used these as a basis to suggest that Bowman is "limited to its facts" and may apply only to criminal statutes, "and perhaps only [to] those relating to the government's power to prosecute wrongs committed against it." 29 F.3d at 71. The Supreme Court cases cited involved the Federal Tort Claims Act, Smith v. United States, 507 U.S. 197 (1993), and to Title VII of the Civil Rights Act of 1964, EEOC v. ARAMCO, 499 U.S. 244

Finally, in United States v. Mitchell, 553 F.2d 996 (5th Cir. 1977), the Fifth Circuit, in an appeal of a criminal conviction, declined to apply the Marine Mammal Protection Act (MMPA), 16 U.S.C. § 1361 et seq., to acts committed by a United States citizen while in foreign waters. The MMPA expressly applies in United States waters and on the high seas. Id. § 1372(a). The acts that formed the basis for Mitchell's criminal conviction were in compliance with the laws of the government exercising sovereignty where the acts were committed. In its Bowman analysis, the court noted that, under international law, each sovereign controls the natural resources within its own territory. 553 F.2d at 1002-03. Moreover, limiting application of the MMPA to United States waters and the high seas would not frustrate that statute's purpose. Id. at 1003. The court concluded: "We cannot then infer from the nature of the MMPA that Congress intended to apply its restrictions to the territories of foreign sovereigns." Id. Having rejected the Bowman exception, the court applied the presumption against extraterritorial application, and found that neither the statute nor legislative history provided the "clear expression" necessary to overcome the presumption. Id. at 1003-04.

The cases which have declined to follow Bowman are all distinguishable from application of the MBTA to U.S. citizens and persons on U.S.-flagged vessels in international waters. Cases involving only civil statutes, such as Kollias, are distinguishable from the cases involving criminal statutes to which Bowman directly speaks. Pizzarusso is distinguishable because it involved extraterritorial application of a criminal statute to a foreign national in foreign territory. Finally, the result in Mitchell is distinguishable because it involved prosecution of a U.S. national for actions taken within the territorial waters of another sovereign. 553 F.2d at 1002-03.

Mitchell is worth considering further because of the superficial similarity between the MMPA and the MBTA. Specifically, the court in Mitchell noted that (1) the MMPA is a natural resources statute, (2) such statutes are inherently domestic in nature, (3) each sovereign has authority over natural resources in its territory, and (4) another sovereign may strike a balance different from that struck by the Congress. The court concluded: "The traditional method of resolving such differences in the international community is through negotiation and agreement rather than through the imposition of one particular choice by a state imposing its law extraterritorially." Id. at 1002. While the MBTA is a natural resources statute like the MMPA, the statutes are otherwise quite different. Unlike the MMPA and most other natural resource statutes, the MBTA is the direct result of the sort of international "negotiation and agreement" that the Mitchell court identified as the appropriate mechanism for international natural resource protection.[5] As discussed above, the international genesis of the MBTA means that it cannot be

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(1991), two statutes which focus on domestic concerns.

[6] Several treaties relating to marine mammals predate the MMPA, but the statute (particularly with regard to the take prohibitions at issue in Mitchell) was not enacted to implement any such treaty. In fact, it was intended, among other things, to spur future treaty negotiations regarding the conservation of marine mammals. See 16 U.S.C. §§ 1361(4), 1378.

considered "inherently domestic in nature," and supports its application to certain persons in international waters. Moreover, the interpretation of the MBTA contained in this Opinion does not affect the authority of other sovereigns over natural resources in their territories, as it limits extraterritorial application of the MBTA to international waters, which are not within the territory of any sovereign. Cf. Skiriotes v. Florida, 313 U.S. 69, 73 (1941) (upholding application of Florida law protecting marine sponges to Florida citizen for actions taken on the high seas). Thus, this opinion is consistent with both the result and the reasoning of Mitchell.

Based on the foregoing analysis, I conclude that the MBTA fits the Bowman exception and can be enforced extraterritorially against United States citizens for acts taken in international waters, and against citizens of any country for acts taken on U.S.-flagged vessels in international waters.[7]

IV. OUR PREVIOUS OPINIONS

This office has issued three prior memorandum opinions involving extraterritorial application of the MBTA. Each of these opinions was directed to questions not here at issue and is therefore distinguishable. The first concluded that the MBTA did not apply to actions of United States corporations in the territory of other sovereigns. Memorandum from Assistant Solicitor, Fish and Wildlife, to Chief, Division of Law Enforcement, Fish and Wildlife Service, Re: Extraterritorial application of section 2 of the Migratory Bird Treaty Act (Dec. 11, 1980). The second concluded that the MBTA did not apply to actions of Japanese fishermen outside of the territory of the United States. Memorandum from Assistant Solicitor, Fish and Wildlife, to Office of Migratory Bird Management, FWS, Re: U.S. - Japan Migratory Bird Treaty (Mar. 27, 1981). The third concluded that President Reagan's proclamation establishing the U.S. Exclusive Economic Zone did not change the jurisdictional scope of the MBTA. Memorandum from Assistant Solicitor, Fish and Wildlife, to Director, Fish and Wildlife Service, Re: Application of the Migratory Bird

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[7] This opinion does not address whether the Presidential Proclamations regarding the U.S. assertion of a twelve-NM territorial sea (Proclamation 5928 (Dec. 27, 1988)), and a 200-mile EEZ (Proclamation 5030 (Mar. 10, 1983)) apply to the MBTA. If these Proclamations are interpreted as extending the reach of the MBTA, the MBTA would apply to all persons within those respective areas, and not be limited to U.S. citizens and anyone on U.S.-flagged vessels. Caveats in or accompanying these proclamations limit the extension of existing domestic laws within the expanded territorial sea and the EEZ. The Office of Legal Counsel of the Department of Justice (OLC) has opined that "[t]he issue in determining the effect of the proclamation on domestic law is whether Congress intended for the jurisdiction of any existing statute to include an expanded territorial sea." Legal Issues Raised by Proposed Presidential Proclamation To Extend the Territorial Sea, 12 Op. O.L.C. 238, 253 (1988). This analysis was specifically applied to the jurisdiction of the Antiquities Act, 16 U.S.C. 431 et seq., in an OLC opinion of September 15, 2000, which concluded that the Antiquities Act did in fact apply to both the extended territorial sea (three to twelve miles) and within the EEZ.

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Treaty Act Within the 200 Mile Exclusive Economic Zone (Oct. 6, 1987). Those conclusions are consistent with this opinion.

Some language in those opinions is, however, inconsistent with our conclusions here. The first opinion, for example, noted:

> Since the migratory bird treaties are implemented by the laws of the party countries, and non-party countries can also protect migratory birds, it appears that the primary function of the Act is to implement the treaties within the United States. Moreover, U.S. citizens in foreign countries are subject to the laws of those countries. Thus, limiting the prohibitions of [the MBTA] to the territory of the United States does not "leave open a large immunity" for violations committed by U.S. citizens abroad.

Dec. 11, 1980, Opinion at 3-4 (citations omitted) (emphasis added). The emphasized portion of the quotation suggests a conclusion that the MBTA applies solely to the territory of the United States. But the opinion did not address the question addressed here, of whether the purposes of the MBTA can be effectuated without its application in international waters, to the extent consistent with international law. We disavow a literal reading of that quotation, for the reasons set out above.

In our second opinion, we relied on the first one to conclude that Japanese fisherman would be subject to prosecution under the MBTA only if the violations occurred in U.S. territorial waters. This opinion must be modified with the caveat that the MBTA would be applicable to such fisherman if the violations occurred on U.S.-flagged vessels in international waters.

Our third opinion, without additional analysis, stated that we had concluded in the previous two opinions that the MBTA applies only in U.S. territory. We reject this dictum to the extent that it conflicts with this opinion.

To summarize, none of our previous opinions addressed the question at issue here, although those opinions contain language stating broad conclusions unsupported by analysis. To the extent that any of the broad characterizations found in those opinions conflict with this opinion, the earlier opinions are superseded.

V. CONCLUSION

Application of the MBTA in international waters beyond three nautical miles serves an important governmental interest, and limiting its application would severely curtail its usefulness, particularly with regard to certain species of protected birds. Therefore, under Bowman, the nature of the MBTA requires its application to United States citizens, and any person aboard a U.S.-flagged vessel, for acts taken in international waters.

GRAY & PAPE
INC.
CULTURAL RESOURCES CONSULTANTS
1318 MAIN STREET CINCINNATI, OHIO 45202-7614 (513) 287-7700 FAX (513) 287-7703

A Review of the "Cultural Resources" and "Visual Studies" Sections of the Draft Environmental Impact Statement Prepared for the Cape Wind Energy Project

Introduction and Summary

At the request of the Alliance for the Preservation of Nantucket Sound, Gray and Pape reviewed sections of the Draft Environmental Impact Statement (DEIS) prepared for the proposed Cape Wind project that address above-ground resources to determine whether the efforts to identify historic properties and assess the potential effects of the project were adequately addressed. We reviewed tables, figures, and appendices, including background reports prepared by Public Archaeology Laboratory, Inc. (PAL), in addition to the main body of the report.

Gray and Pape was specifically requested to review the National Historic Landmark (NHL) nominations for the Kennedy Compound (the "Kennedy Compound NHL") and the Nantucket Historic District ("Nantucket Island NHL") to determine whether the boundaries of these properties require reevaluation as stipulated in 36 CFR 800.4. Gray and Pape concludes that the boundaries for both NHLs should be reevaluated, particularly in terms of considering the historically significant and character-defining setting of each NHL. The DEIS, in determining that the proposed Cape Wind project will have an adverse effect on both NHLs, acknowledges that the waters of Nantucket Sound, including Horseshoe Shoals, are part of the historically significant and character-defining setting of both NHLs.

Gray and Pape agrees with the assessment of PAL, the U.S. Army Corps of Engineers (the Corps) and the Massachusetts State Historic Preservation Officer (SHPO) (Massachusetts Historical Commission) that construction of the Cape Wind Energy Project at the preferred alternative location of Horseshoe Shoals in Nantucket Sound will cause direct adverse effects to numerous historic properties, including both the Kennedy Compound NHL and Nantucket Island NHL.

Evaluation of Effects to NHLs from the Cape Wind Energy Project

The Corps implements Section 106 through its own regulations, "Processing of Department of the Army Permits: Procedures for the Protection of Historic Properties, Appendix C" (33CFR Part 325). According to Paragraph 15 of Appendix C an undertaking has an effect on a designated historic property "when the undertaking may

alter characteristics of the property that qualified the property for inclusion in the National Register." The regulations provide that in determining whether an undertaking has an effect, "alteration to features of a property's location, setting, or use may be relevant, and depending on a property's important characteristics, should be considered." An adverse effect occurs when the effect on a designated historic property "may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association." Adverse effects may include, but are not limited to, "alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register" and "[i]ntroduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting."[1]

In the DEIS the Corps determined that the Cape Wind project will have an adverse effect on two NHLs: the Kennedy Compound NHL and the Nantucket Island NHL.[2] The Visual Impacts report prepared by PAL, upon which the findings of adverse effects to historic properties is based, does not limit its finding to visual effects, and concludes that the Cape Wind project "will have an adverse effect" on both the Kennedy Compound NHL and the Nantucket Island NHL.[3]

The fact that in its assessment of effects to historic properties from the Cape Wind project the Corps treats visual effects separately from physical effects, suggests that perhaps the Corps intends to suggest that visual effects are not direct effects. If so, this is fallacious reasoning. PAL and the Corps acknowledge that the effects from the Cape Wind project to historic properties in the project's area of potential effects (APE), including the Kennedy Compound NHL and Nantucket Island NHL, will change and diminish the Nantucket Sound setting of these properties. Since these changes are physical changes to elements of the historic properties themselves, they constitute direct effects, with impacts that are both physical and visual in nature.

Appendix C of 33 CFR 325 makes no distinction between direct and indirect effects. It simply establishes a procedure for determining whether an undertaking will have an adverse effect upon a designated historic property. The Advisory Council on Historic Preservation's regulations, 36 CFR 800, state that an adverse effect is found when an undertaking may alter "directly or indirectly, any of the characteristics of a historic

[1] 33 CFR 325, Appendix C: Procedures for the Protection of Historic Properties, Paragraph 15: Criteria of Effect and Adverse Effect.
[2] DEIS at Section 5.10.4.3.2, pp. 5-206 and 5-207, 208.
[3] DEIS at Appendix 5.10F, pp. 38 and 42.

property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association."[4]

Nantucket Sound comprises a significant portion of the setting for the Kennedy Compound NHL and the Nantucket Island NHL. The setting is an integral part of each NHL, although neither of the original Inventory-Nomination Forms submitted to and describing the properties for the National Register of Historic Places (NRHP) specifically mentions their setting. In the Inventory-Nomination Form for the Kennedy Compound NHL the historic resources is described as "six acres of waterfront property on Nantucket Sound" that includes "sweeping views of the ocean." The statement of significance for the Kennedy Compound also suggests the significance of Nantucket Sound to the property, noting that it was at this location that the Kennedy children learned to sail and engage in other competitive activities.[5] In the Inventory-Nomination Form for the Nantucket Island NHL, the historic property is described as encompassing the entire island. The described boundaries are somewhat imprecise; however, stating that "[t]he landmark designation is the entire island of Nantucket, approximately 75 miles in circumference and 30,000 acres in area."[6] It is unclear whether "the entire island" is defined based upon average high or low tide lines, or whether it includes any areas of shallow, inshore waters.

ACHP regulations provide that a historic property, including the appropriateness of its boundaries, should be reevaluated during a Section 106 review where prior evaluations may be incorrect or out-of date, due to "[t]he passage of time, changing perceptions of significance, or incomplete prior evaluations."[7] The original nominations of both Nantucket Island NHL and the Kennedy Compound NHL may be said to be incorrect or out-of-date with regard to the extent of the properties' boundaries due to one or all of the criteria for reevaluation. PAL and the Corps appear to admit the need for a reevaluation of boundaries by stating that the Nantucket Sound setting in which the Cape Wind project is proposed is an integral part and a characteristic of both NHLs.

[4] 36 CFR 800.5(a)(1).
[5] Barry Mackintosh, "Kennedy Compound National Register of Historic Places Nomination Form" (September 1972), Sections 7 and 8.
[6] Patricia Heintzelman, "Nantucket Historic District National Register of Historic Places Nomination Form" (February 1975), Section 7, 3.
[7] 36 CFR 800.4(c)(1).

Despite a preference for using natural features as boundaries, NRHP guidance provides for including elements of a property's setting. In the past, these considerations led to the recognition that the appropriate setting for a collection of farm buildings often includes significant areas of land. Similarly, the NRHP has in recent years recognized the significance and eligibility of cultural landscapes as historic properties. Given the close associations that both the Kennedy Compound and Nantucket Island NHLs have with the sea and maritime industries, the non-inclusion of some portion of the surrounding waters appear contrary to prevailing NRHP guidance regarding the setting and landscape of historic properties, and is analogous to the former practice of listing farm buildings in the NRHP without including any of the farmland associated with the buildings.

NRHP guidance provides for including elements of a property's setting within the listed boundaries. Boundaries are intended to "encompasses the resources that contribute to the property's significance" and usually include the immediate surroundings and "the appropriate setting," while excluding buffer zones and open space. These two statements may appear to be contradictory, but the selection of boundaries for historic properties is acknowledged to be a "judgment based on the nature of the property's significance, integrity, and physical setting."[8] According to NRHP guidance "natural features of the landscape may be included when they are located within the district or were used for purposes related to the historical significance of the property."[9] To illustrate this point an example is provided of a district comprised of several farmsteads partially bounded by a creek. The guidance states that the creek may be included within the boundaries of the historic property if it was important in the siting of the farms, served as a source of power, or furnished "natural resources exploited by the farmsteads."[10]

In the case of the Kennedy Compound NHL the property's significance is tied to its association with the Kennedy family. The NHL inventory-nomination form notes that the property commands sweeping views of Nantucket Sound and was the location where the Kennedy children learned to sail and engage in other important competitive activities. This clearly indicates that the waters of Nantucket Sound are part of the historically significant setting for the NHL.

[8] Donna J. Seifert, *National Register Bulletin: Defining Boundaries for National Register Properties* (Washington, DC: National Park Service, 1995, revised 1997), 1-2.
[9] Ibid., 2.
[10] Ibid.

GRAY & PAPE
INC.
CULTURAL RESOURCES CONSULTANTS
1318 MAIN STREET CINCINNATI, OHIO 45202-7614 (513) 287-7700 FAX (513) 287-7703

The Nantucket Island NHL is considered nationally significant as a "near pristine natural coastal environment with a well-preserved collection of structures reflecting its early development, its emergence as [a] major whaling center in the middle of the nineteenth century, and its subsequent summer resort expansion."[11] The near shore waters surrounding Nantucket clearly constitute a natural resource exploited by the island's residents and were used for purposes related to the historical significance of the property. The waters immediately surrounding the island supplied sustenance to the island's residents in the form of fish, whales, seals, birds, and shellfish. The waters served as the fields and pastures of many of the island's residents, in a nearly identical fashion to the fields and pastures of land-bound farmers. Island residents knew and exploited the near shore fishing and shell fish grounds in a sophisticated manner. If Nantucket is historically significant for its associations with the maritime industries of New England, then the natural features of the near shore sound surely "were used for purposes related to the historical significance of the property."[12]

One significant aspect of Nantucket's setting is the fact that it is an island, separated from the mainland and, until recently, only approachable from the mainland by a vessel traversing the waters of Nantucket Sound. The singular fact that Nantucket is an island contributed significantly to its popularity as a summer resort.[13] The distinctiveness of Nantucket as a place, a destination only reachable by a passage across water, and bounded by scenic, unbroken ocean vistas, attracted visitors and significantly contributed to the island's popularity as a resort.

The sea passage to the island, by private vessel or ferry, remains a special event, permitting the traveler to prepare oneself for arrival at a special destination and, in the case of Nantucket, a historic property. In essence, Nantucket Sound serves as the foreground to the historic property. The island's setting in the ocean, and the leisurely, ritualized approach over the water, constitute important elements of the historic property's setting. Placing the proposed wind farm astride this approach will significantly alter the setting of the historic property by altering the approach to the property. On board ferries and other vessels passing to and from the mainland and the island, the wind farm

[11] PAL, "Technical Report: Visual Impact Assessment of Multiple Historic Properties, Cape Wind Project," Appendix 5.10-F to Cape Wind DEIS, 30.
[12] Quote from Seifert, *Defining Boundaries*, 2.
[13] In 1982 the period of significance of the Nantucket Historic District was expanded to include resources constructed between 1900 and ca. 1930. One of the justifications advanced for this expansion was the economic importance of the island's summer resort trade, beginning in the 1870s and continuing to the present.

will constitute a significant visual intrusion, akin to that the Gettysburg Tower represented at Gettysburg National Military Park. While not located within the historic district, the wind farm, like the now demolished observation tower, will significantly affect the setting of the historic property, dramatically altering the feeling and association of the sea passage to this distinct and nationally significant historic property. As the Corps has acknowledged and the Massachusetts State Historic Preservation Office has concurred, this constitutes an adverse effect under both 33 CFR 325 and 36 CFR 800.

Consequently, because the Cape Wind project will change and diminish the character of the setting of both the Nantucket Island NHL and Kennedy Compound NHL, and because this setting is both an integral and critical element of these historic properties and a character-defining feature essential to the NRHP eligibility of each property, the Cape Wind Project will adversely affect both the Nantucket Island NHL and the Kennedy Compound NHL.

The fact that the NHL boundaries contained in the nomination forms for the Kennedy Compound NHL and the Nantucket Island NHL do not encompass any of the waters of Nantucket Sound is not surprising, since NRHP guidance regarding the establishment of boundaries is clearly focused on establishing boundaries for terrestrial resources and specifically calls for the use of natural features "such as a shoreline" in the selection of appropriate boundaries.[14] Nevertheless, given the close associations that these properties have with the sea and maritime industries, the non-inclusion in the Nantucket Island NHL listing of the waters of Nantucket Sound is analogous to the former practice of listing farm buildings in the NRHP without including any of the farmland associated with the buildings.

It should be noted that the NRHP has made exceptions to the general policy of discouraging the nomination or listing of significant bodies of water. The Isles of Shoals Historic District in Maine and New Hampshire, listed in the NRHP in 1974, includes the islands, ledges, and "limited surrounding waters" that comprise the archipelago. Valcour Bay, on Lake Champlain in Clinton County, New York, was listed on the NRHP in 1979 as the site of a significant Revolutionary War naval battle. Similarly, Plattsburgh (Cumberland) Bay, located a short distance north of Valcour Bay, was listed in 1976 as the site of a naval action during the War of 1812.[15] The latter two nominations are not

[14] Seifert, *Defining Boundaries*, 3.
[15] James L. Gavin, "Isles of Shoals National Register of Historic Places Inventory-Nomination Form" (February 1974); Richard Greenwood, "Valcour Bay National Register of Historic Places Inventory-

directly applicable to the Nantucket Historic District, since they were nominated and listed as sites, defined in NRHP guidance as "the location of a significant event." Nevertheless, it is important to note that they represent the placement of nearly 3,500 acres of water on the NRHP to commemorate the scene of a battle, despite NRHP guidance that states "[o]rdinarily ... properties primarily commemorative in nature ... shall not be considered eligible for the National Register."[16]

The waters of Nantucket Sound represent a vital part of the setting of the Nantucket Historic District and the Kennedy Compound. Refinement and redefinition of the district's boundaries should consider the significant role that Nantucket Sound played in the settlement, development, history, and economy of Nantucket. If so considered, it appears that the boundaries of the NHL district could appropriately be expanded to include those portions of Nantucket Sound considered to constitute the setting of the Nantucket Island NHL and the Kennedy Compound NHL.

The Corps and PAL have concluded, in the DEIS, that the proposed Cape Wind project on Horseshoe Shoals will have an adverse effect upon the setting of the two NHLs. This strongly suggests that a reevaluation of the boundaries of these NHLs should include Horseshoe Shoals as an important component of the properties' historically significant setting. This conclusion is most consistent with the findings of the Corps and PAL that the proposed Cape Wind Project will have an adverse effect on both properties by altering the character of the properties' setting and by introducing a visual element that is out of character with the properties and their settings.

Conclusion

For the reasons discussed above, we conclude that the Cape Wind project will directly and physically alter the shape and outline of the horizon and the water views of the sound from the Kennedy Compound NHL and Nantucket Island NHL. These effects will physically and directly alter, and diminish the integrity of, the character-defining element of the Nantucket Sound setting that is a physical part of these resources and renders them eligible for the National Register and as National Historic Landmarks.

Nomination Form" (December 1975); Richard Greenwood, "Plattsburgh (Cumberland) Bay National Register of Historic Places Inventory-Nomination Form" (January 1976). The Plattsburgh nomination also includes two buildings.

[16] National Park Service, *National Register Bulletin: How to Complete the National Register Registration Form* (Washington, DC: National Park Service, 1997), 15, 37.

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INC.
CULTURAL RESOURCES CONSULTANTS
1318 MAIN STREET CINCINNATI, OHIO 45202-7614 (513) 287-7700 FAX (513) 287-7703

Therefore, the Cape Wind energy project will directly and adversely affect both the Kennedy Compound and the Nantucket Island NHLs.

GRAY AND PAPE, INC.

By: 

Title: Senior Historian

IDENTIFICATION OF POTENTIALLY ELIGIBLE PROPERTIES
CAPE WIND ENERGY PROJECT

Prepared for:
Alliance to Protect Nantucket Sound, Inc.

Prepared by:
Candace Jenkins
Consultant in Architectural History and Historic Preservation

February 16, 2005

Consideration of National Register-eligible Properties

The Alliance to Protect Nantucket Sound, Inc. asked me to review the sections of the Cape Wind Draft Environmental Impact Statement (DEIS) that deal with historic above-ground resources to determine if all eligible resources have been considered by the Army Corps of Engineers (Corps) as required under federal law. I reviewed DEIS tables, figures, and appendices, including background reports prepared by the Public Archaeology Laboratory, Inc. (PAL), in addition to the main body of the report.

The DEIS relies on the Corps regulations for its definition of historic properties. Those regulations differ from Section 106 of the National Historic Preservation Act (NHPA) in a very important way: they limit consideration of indirect effects, including visual effects, to properties "designated" for inclusion on the National Register of Historic Properties (National Register), and ignore properties merely eligible for inclusion on the National Register.

Section 106 of the NHPA and the implementing regulations of the Advisory Council on Historic Preservation (ACHP), "Protection of Historic Properties" (36CFR800) require Federal agencies to consider the effects of their actions on historic properties and to take the effects into account during project planning and implementation. Historic properties are defined as properties "included in or eligible for inclusion in the National Register." (36CFR800.16(1)(1), 16 U.S.C. § 470f). Executive Order 11593, which was issued in recognition of the large numbers of historic properties throughout the nation, and the time and effort necessary to complete designation documentationextended the obligation of agencies like the Corps to consider eligible properties.

The Corps implements Section 106 through its regulations, "Processing of Department of the Army Permits, Procedures for the Protection of Historic Properties, Appendix C" (33CFR Part 325). Under Appendix C, the Corps assesses indirect effects only for designated historic properties (33CFR Part 325, App. C § 15(b)), defined as those "listed in the National Register of Historic Places (National Register) or which have been determined eligible for listing in the National Register pursuant to 35 CFR part 63" or those determined eligible for listing by consensus of the SHPO and the Corps. By excluding other eligible historic properties, the Corps regulationsproduce a much smaller universe of historic properties than that mandated by Section 106 and the ACHP regulations.

In the case of the Cape Wind project, the Corps deviated slightly from its regulations and considered some properties listed in the State Register of Historic Places that were not otherwise listed in or determined eligible for listing in the National Register.The Corps' efforts added only a handful of properties, none of which were determined to be affected by the project. A substantial number of potentially eligible properties were not considered by the Corps.

The DEIS explains the Corps' methodology in the introductory section, but throughout the report there are references to designated and eligible properties, creating the impression that all eligible properties were considered. In fact, no eligible properties other than some local historic districts that are listed in the State Register of Historic Places were considered. Moreover, neither the DEIS nor the background reports clearly explain how the original list of all designated properties on Cape Cod and the Islands ("Known Historic Properties Within Potential Visual Range of the Cape Wind Park; Appendix 5.10-B) was reduced to the much shorter list of properties actually field-checked for potential visibility ("Historic Properties and Districts Assessed for Wind Park Visibility for the Cape Wind Project; Table 5.10-1) to the final list of twelve that received visual simulation studies (Recommended Section 106 Findings of Effect for Aboveground Historic Properties within the Cape Wind Project Visual APE; Table 5.10-5).

During review of these documents, it has become clear that the DEIS methodology was insufficient to yield a true picture of effects on historic resources. In addition, it is apparent that the numbers of adverse effect findings were directly proportional to the National Register activity of the local communities within the project area. Barnstable,MA is the only community that has undertaken a comprehensive evaluation and designation of National Register properties. Thus, it is not surprising that Barnstable heads the list of adverse effect findings with six properties. In contrast, less active communities like Dennis and Harwich have no adverse effect findings, not because historic properties do not exist, but because they have not been identified, evaluated and designated.

I conducted a limited review of the Inventory of the Historic Assets of the Commonwealth maintained by the Massachusetts Historical Commission (MHC) to identify potentially eligible properties with likely views of the Project. I confined myself to properties that had been recommended for listing by professional consultants as the result of comprehensive surveys or had been evaluated by MHC staff through their National Register Eligibility Opinion process. This very conservative approach produced a list of 23 properties including 11 individual properties and 12 historic districts that included total of approximately 1,562 individual components. A full review of the inventory forms for each town followed by fieldwork to identify additional properties would undoubtedly identify additional properties. It should be noted that many of the properties listed below are turn-of-the-century summer resort communities that were planned and sited to take advantage of proximity to Nantucket Sound and the views thereof.

Eligible Properties Not Assessed by the Corps

Three properties in Tisbury fall under the Army Corps definition of designated properties and appear to have been left off of Table 5.10-1: Historic Properties and Districts Assessed for Wind Park Visibility.
- William Street NRHD, Tisbury (listed NR property) (approximately 56 components)
- Seaman's Reading Room, Tisbury (consensus DOE property)
- Ritter House, Tisbury (listed NR property)

Potentially Eligible Properties Not Assessed by the Corps (Listed by Community)

Falmouth

- ***Falmouth Heights HD, Falmouth (approximately 500 components)***

The Falmouth Heights National Register District is significant as the first planned summer resort colony in a town and region that continue to be dominated by that industry. Dating to 1871, the district epitomizes the key characteristics of early seaside resorts. Those characteristics include fine beaches and a scenic location on Vineyard Sound, a land division pattern of small house lots relieved by large public parks, a narrow, winding street system that invites pedestrian rather than automobile use, and an architectural mix of late-19th century Gothic Revival style cottages, turn-of-the-century Colonial Revival and Shingle Style residences, and early-20th century Craftsman bungalows. The district as a whole is significant in the areas of Community Planning and Development, Entertainment and Recreation, and Architecture.

The Falmouth Heights National Register District is important primarily at the local level with a period of significance that extends from its establishment in 1871 through 1940 when development was complete and the area was at its zenith as a popular summer destination. Subsequently, the district entered a period of decline that has only recently been reversed. During that period and the years immediately preceding it, all four of its historic hotels, an observatory/chapel, and a small

number of dwellings were demolished. Nevertheless, the great majority of buildings that were present during the period of significance remain today and retain substantial integrity to that period. Many are in the process of rehabilitation, often with respect for historic character. In addition, the original subdivision plan including the street system, building lots, and parks remains nearly intact, and the seaside setting remains unspoiled.

Thus, the Falmouth Heights National Register District possesses substantial integrity of location, design, setting, materials, workmanship, feeling, and associations. It clearly illustrates the evolution of the Town of Falmouth, of Cape Cod, and of coastal New England as renowned summer resorts in the 19th and 20th centuries. The key characteristics cited above are immediately recognizable and create a unique sense of place that clearly distinguishes Falmouth Heights. The district meets criteria A and C of the National Register of Historic Places.

• ***Maravista HD, Falmouth (approximately 25 components)***
The name of this area means "view of the sea" in Portuguese. Located just east of Falmouth Heights, it developed as summer resort area in early 20th century.

• ***Menauhant HD, Falmouth (approximately 45 components)***
Menauhant is a summer resort area that originated in 1874 and continued to develop through the early 20th century. It once included a hotel and long wharf that extended into Nantucket Sound. Buildings and setting are well preserved.

• ***Church Street HD, Falmouth (contains Nobska Light) (approximately 25 components)***
Church Street originated in the early-18th century, but its historical significance dates to the late-19th and early-20th centuries when it became the site of a lighthouse and developed as a summer resort. The area began to assume its present character as an enclave of large summer homes by 1880. Henry H. Fay, son of Joseph Story Fay, and John M. Glidden (see 70, 80 Church St), a principal in the Pacific Guano Company, had erected large estates at the southern tip of the point; they were accessed by a winding road off Woods Hole Road. Frank Foster had also built an estate on the west side of Church Street that ended just mid-way down the point (see 45 Church St). All of these are clearly shown on an 1887 Birds Eye along with the old tavern, and the estates of A.C. Harrison (see 55 Church St) and W.O. Luscombe (demo'ed 1967) all on the west side of Church Street.

By 1908, little had changed except the addition of the Robert Bacon estate south of the tavern (see 93 Church St). In the 1920s, the Glidden estate was substantially remodeled and the Carlton estate (see 90 Church St) was developed around the core of its former water tower. The Colonial Revival style Cooper House (60 Church St) was added in 1929.

Yarmouth

• ***15 Windmere Road, Yarmouth***; full Cape ca. 1750-1775

• ***193 Berry Ave, Yarmouth***; Shingle Style summer resort hotel ca. 1900

• ***268 South Sea Ave, Yarmouth***; half-Cape

• ***Corey House, Great Island, Yarmouth***

• ***205 South Street, Yarmouth***; Three-quarter Cape, ca. 1770

• ***Park Ave. HD, Yarmouth (approximately 25 components)***
Collection of late 19th and early 20th century summer resort houses overlooking Nantucket Sound; unusually intact summer colony that has not been impacted by the extent of alterations and modern infill seen in other similar areas along Yarmouth's Nantucket Sound coast; includes #239-267-Park Avenue.

• ***Mass. Ave. HD, Yarmouth (approximately 25 components)***
Collection of late 19th and early 20th century summer resort houses overlooking Nantucket Sound; unusually intact summer colony that has not been impacted by the extent of alterations and modern infill seen in other similar areas along Yarmouth's Nantucket Sound coast; includes #286-292-Massachusetts Avenue between Broadway and Webster Street, Webster Street, and the east side of Columbus Avenue.

Harwich

• ***Hithe Cote, 32 Snow Inn Road, Harwich***

Chatham

• ***Stage Harbor Light, Chatham***
Stage Harbor Light possesses integrity of location, design, setting, materials, workmanship, feeling, and associations with Chatham's maritime history. Commissioned in 1880, it guarded the entrance to Stage Harbor until it was decommissioned in 1935. Although the lantern/lens was removed at the time, the complex remains nearly intact from the 19th century. This is in contrast to many other lighthouse complexes that have been extensively remodeled with artificial siding, new window sash, and interior modernizations. The undeveloped marine setting is an important component of the light's significance. Stage Harbor Light meets criteria A and C of the National Register.

• ***Capt. Joshua Nickerson House, 190 Bridge Street, Chatham***
The Captain Joshua Nickerson House possesses integrity of location, design, setting, materials, workmanship, feeling, and associations with Chatham's early 19th century maritime history as well as its later 19th and early 20th century summer resort development. This large and elegant Federal period dwelling, constructed in c1810 overlooking the Mitchell River, illustrates the wealth that some of Chatham's sea captains began to amass after the Revolution. Operated in the 1870s as the Sportsmen's House and the Monomoy House, attracting hunters from the Boston area, it is part of the first phase of Chatham's summer resort development. Returning to use as a private summer home owned by out-of-staters in the early 20th century, it also has clear associations with the second phase. The Nickerson House meets criteria A and C of the National Register.

• ***Jonathan Higgins House, 300 Stage Neck Road, Chatham***
Mid-18th century half-Cape moved from Wellfleet in 1939 and restored by architect/architectural historian; may be significant as example of Colonial Revival period in Chatham; located on bluff overlooking Oyster River and Nantucket Sound

• ***Stage Harbor Road HD, Chatham (approximately 50 components)***
The Stage Harbor Road Area possesses integrity of location, design, setting, materials, workmanship, feeling, and strong associations with Chatham's period of maritime prosperity. This road developed as an important internal roadway, connecting Main Street with Stage Harbor and its maritime industries. The area's history continues to be reflected in its large and diverse collection of

18th, 19th, and 20th century dwelling houses that remain with few modern intrusions. The area meets criteria A and C of the National Register.
Includes that portion of Stage Harbor Road that runs north-south between Oyster Pond and Champlain Road as well as the unpaved Atwood Lane. (129-576 Stage Harbor Road and 79 Atwood Lane)

• ***Champlain Road HD, Chatham (approximately 25 components)***
The Champlain Road area is located on the south side of Stage Neck, originally known as Great Neck or Saquanset. Champlain Road appears to date from the early 19th century. The road itself does not appear on the 1836 map, but eight houses are shown strung out along the north bank of Stage Harbor with a large saltworks at the west end. This area, perhaps better than any other, illustrates the predominant role of the sea in Chatham's developmental history. Today, the historic houses are almost all located on the north side of the road facing the harbor; includes the portion of Champlain Road (Street #s 15-205) that parallels Stage Harbor and runs east-west between Stage Harbor Road and the point where Champlain Road turns sharply northward

Oak Bluffs

• ***Cottage City HD, Oak Bluffs (approximately 386 components)***
This recently designated local historic district is now listed in the State Register of Historic Places. It also includes many individual properties that have been recommended for NR listing, especially Waban, Ocean, Nashawena, and Naushon Parks which face directly onto Nantucket Sound. "This area was named for Morris Copeland, an architect whose 1871 "Plan for Oak Bluffs" was the blueprint for the community. The proposed Cottage City Historic District consists of 386 properties. Architectural styles of the proposed district are predominately gingerbread cottages constructed in the 19th century..... In addition to the cottages, the district includes three houses of worship, the Cottage City Town Hall, the country's oldest continuously operating carousel, a gazebo and twelve small parks." (MHC eligibility opinion) The area also has strong associations with Oak Bluffs' Afro-American history.

• ***Vineyard Highlands HD, Oak Bluffs (approximately 300 components)***
This was the third major area developed in central Oak Bluffs following Wesleyan Grove and the Oak Bluffs Land & Wharf Co. area further east. In 1870 several Methodist clergy and laymen connected with the Camp Meeting Association to form the Vineyard Grove Company that proceeded to buy the original acreage and to expand their holdings to about 200 acres. The area was designed by Charles Talbot using the earlier developments as models, including small house lots balanced by numerous parks, all tied together by a curvilinear street system. Summer resort-related development continued into the 20th century.

The area includes several properties related to Oak Bluffs Afro-American heritage. These sites were recorded in a 1999 survey and 21 were recommended for individual listing in the NRHP.

Tisbury

• ***West Chop HD, Tisbury (approximately 100 components)***
This is a well-preserved planned summer resort community with an impressive collection of Shingle Style houses. Occupying the northernmost tip of Tisbury, it includes the West Chop Lighthouse and offers unobstructed views of Nantucket Sound from many locations. It meets criteria A and C of the NRHP.

CANDACE JENKINS

Consultant in Architectural History & Historic Preservation

PROFESSIONAL EXPERIENCE

1984-present **ARCHITECTURAL HISTORY & HISTORIC PRESERVATION CONSULTANT**

Providing a full range of services including documentary research, architectural and historical surveys, National Register nominations, expert witness testimony, environmental impact reports, building reuse studies, historic structure reports, Historic American Building/Engineering Survey documentation, and historic preservation plans, for a variety of public and private sector clients.

1977-84 **MASSACHUSETTS HISTORICAL COMMISSION (SHPO)**

1/83-5/84 **Preservation Planning Director.** Directed staff efforts to identify, evaluate, and designate properties of historical and architectural significance throughout the state. Major program activities included National and State Registers of Historic Places, Local Historical Commissions, Local Historic District Commissions, Certified Local Governments, Survey & Planning Grants, Inventory of the Historic Assets of the Commonwealth, State Reconnaissance Survey, and technical assistance to public.

5/80-12/82 **Registration Director.** Administered statewide evaluation programs including opinions of historical and architectural significance, nominations to the National Register of Historic Places, development and maintenance of 40,000 property State Register of Historic Places. Provided interface with environmental review and tax certification activities.

2/78-4/80 **National Register Coordinator.** Evaluated historical and architectural significance of cultural resources for the purposes of nomination to the National Register of Historic Places and compliance with state and federal environmental review statues. Developed statewide approach to Multiple Resource and Thematic National Register nominations.

1/77-1/78 **Assistant Grants Manager.** Assisted in implementation of Federal grants-in-aid program. Reviewed and approved plans for the restoration, rehabilitation and adaptive reuse of historic structures throughout the state. Directed staff effort to increase total FY78 grant allocation for Massachusetts.

EDUCATION

M.A. 1977 **BOSTON UNIVERSITY:** American & New England Studies Program;
National Endowment for the Humanities Fellow.
Historic Preservation Studies with concentration in architectural history and preservation management.

B.A. 1974 **SMITH COLLEGE:** Art/Architectural History major.

PRIMARY SERVICES

- National Register of Historic Places nomination documentation
- Surveys of historic and architectural resources
- Local Historic District establishment and analysis
- Historic Structure Reports including detailed building histories and physical evolution; evaluation of significant interior and exterior features; and building and site histories
- Environmental Impact Reports including interpretation of local, state, and federal preservation legislation; evaluation of effects to historic resources; and development of mitigation measures
- Preservation Plans including integration of historic preservation issues into community-wide planning and zoning documents
- Historic preservation law/expert witness testimony on historic resources and issues
- Historic building and campus reuse studies
- Historic American Building/Engineering Survey recordings
- Architectural/historical research
- Public presentations and slide lectures

QUALIFICATIONS

Candace Jenkins is an experienced consultant who is recognized for her in-depth understanding of a full range of historic preservation issues and programs. Her experience is derived from service as the Preservation Planning Director of the Massachusetts Historical Commission (SHPO), and from participation in over 100 consulting projects. Most of those projects have been subject to stringent review by the National Park Service, State Historic Preservation Offices, and other historic preservation agencies, and have thus met the highest standards. Working for both private and public clients, Ms. Jenkins has documented a wide range of property types embracing buildings, structures, landscapes, and areas. Projects have included fifteen cultural resource surveys, forty-four National Register of Historic Places nominations for individual properties, districts, and multiple-property submissions, sixteen Historic Structure and Landscape Reports, nine restoration support studies, eight master plans and planning studies, twelve local historic preservation plans and planning projects, ten Building and Campus Reuse studies, thirty-two Environmental Impact Reports, seven Historic American Building Survey/MHC recordation projects, three local historic district studies, and seven appearances as an expert witness.

All of these projects have provided extensive experience with the written, photographic, and cartographic materials available at local, state, and national archives. Ms. Jenkins has used these sources to thoroughly document the histories of thousands of historic resources, and to develop the broad contexts within which they exist. The projects have also taught her to identify and analyze specific character-defining elements of historic buildings and areas, and to apply the federal Criteria of Effect and Adverse Effect. Her clear and rational approach has successfully resolved development issues with the concerns of both public and private preservation constituencies in all of her projects.

Candace Jenkins established an independent consulting firm in 1984, providing the full range of services listed above. The firm works both independently, and as a specialized consultant to diverse teams of architects, planners, and engineers. Clients are drawn from both the private and public sectors, and include developers, property owners, towns, state and federal agencies, and regional commissions. Candace Jenkins is included on the Massachusetts Historical Commission List of Preservation Consultants who meet the Secretary of the Interior' Standards.

SELECTED PROJECTS LIST

Environmental Impact Reports, Building Reuse Studies, Master Plans, Historic Recordation Documents (HABS, HAER, MHC)

- New England Hydro-Quebec Transmission Facility Survey/EIR, Massachusetts/New Hampshire 1985 - 1986
- GWEN Communications Network Survey/DEIR/EIR, Massachusetts and Rhode Island 1989 - 1990
- Old King's Highway/Route 6A Corridor Analysis and Plan, Brewster 1991 - 1992
- Freedom Trail Master Planning Study, Boston 1994 - 1995
- McLean Hospital Reuse, Planning, and Development Study, Belmont 1997 - 1998
- Barnstable County Hospital Photographic Recordation Project, Bourne 2003

Historic Structure/Landscape Reports

- Massachusetts State House Historic Structure Report, Boston 1984 - 1985
- Trayser Museum Complex Historic Structure Report, Barnstable 1986
- Federal Buildings Historic Structure Reports, New England 1989 - 1994
  - *United States Customs House: New Bedford, Massachusetts (1832-1836)*
  - *United States Customs House: Portland, Maine (1867-72)*
  - *United States Court House, Post Office, and Customs House: Providence, Rhode Island (1904-1908)*
  - *United States Court House and Post Office: New Haven, Connecticut (1913-1919)*
  - *United States Court House, Post Office and Federal Building: Boston, Massachusetts (1928-1933)*
  - *United States Court House, Post Office and Federal Building: Hartford, Connecticut (1930)*
  - *United States Court House and Post Office: Worcester, Massachusetts (1930-1931)*
  - *United States Postal Annex: Providence, Rhode Island (1937-1938)*
- Union Station Historic Structure Report, Worcester 1994
- Old Manse Historic Structure Report, Concord 1994 - 1995
- Poor Farm Historic Structure Report and MPPF grant application, Falmouth 1998

Nominations to the National Register of Historic Places

- Barnstable Multiple Resource Area, Barnstable 1985 - 1986
- Dune Shacks, Provincetown and Truro 1988
- Southside Historic District, Methodist Campground Historic District, Bray Farm, Yarmouth 1989
- Eldredge Memorial Library, Chatham 1991
- Old King's Highway National Register District, Brewster 1993
- Gloucester Multiple Property National Register Nomination, Gloucester 1993 - 1995
- Stony Brook/Factory Village National Register District, Brewster 1996
- West Falmouth National Register District; Town Poor House, Falmouth 1997

- Cove and Bridge Road Cemeteries; Town Center and Collins Cottages Districts, Eastham 1997 - 1998
- Falmouth Heights Historic District, Waquoit Historic District, Teaticket School, Falmouth 1999-2000
- Old Center Historic District, Bridge Road-Dyer Prince Road Historic District, Eastham 1999-2000
- Old Village Historic District, Chatham 2000
- Elnathan Nye House, Falmouth 2001

Historical Surveys and Preservation Planning

- Historical Resources Survey and Preservation Plan, Barnstable 1984 - 1985
- Cape Cod Historic District Analysis, Barnstable County 1989
- Falmouth Historical Resources Survey, Falmouth 1989 - 1990
- Barnstable Preservation Plan Update, Barnstable 1989 - 1990
- Chatham Historical Resources Survey, Chatham 1990 - 1991
- Sandwich Historical Resources Survey, Sandwich 1992 - 1993
- Falmouth Local Comprehensive Plan, Falmouth 1995
- Old King's Highway/Route 6A Cultural Landscapes Survey 1995
- Hyannis Main Street/Waterfront Local Historic District, Barnstable 1995 - 1996
- Bridge Road/Dyer Prence Road Survey Area, Eastham 1997 - 1998
- Massachusetts Historic Cemeteries Preservation Initiative, Statewide 1999-2001
- Yarmouth Local Comprehensive Plan, Yarmouth 2000-2001

Expert Witness/Court Testimony

- Expert Witness, Old King's Highway Regional Historic District Commission 1986
- Expert Witness, Back Bay Architectural Commission 1990 - 1991
- Expert Witness, Old King's Highway Regional Historic District Commission 1990 - 1992
- Expert Witness, Massachusetts Attorney General's Office 1992
- Expert Witness; Cape Cod Commission 1992
- Expert Witness; Neighborhood Association; Old King's Highway Regional Historic District 1998
- Expert Witness; Neighborhood Association; Chestnut Hill Historic District 1999

Selected Lectures and Publications

October 1991 *The Architectural Heritage of Cape Cod.*
Slide lecture delivered to Cape Cod Commission, Sense of Place Heritage Tourism Study Group

October, 1991 *Discovering the Architecture of Falmouth and Cape Cod.*
Slide lecture delivered to Woods Hole Historical Collections Noontime Conversations

January, 1992 *Discovering the Architecture of Yarmouth and Cape Cod.*
Slide lecture delivered to Yarmouth Historical Society

March, 1992	*Discovering the Architecture of Bourne and Cape Cod.* Slide lecture delivered to Bourne Historical Society
Winter, 1992	*The Development of Falmouth as a Summer Resort, 1850 - 1900.* Spritsail. Volume 6, #1. Woods Hole Historical Collections
June, 1995	*Exploring the Architecture of Cape Cod* All-day bus tour for Society of Architectural Historians New England Chapter.
February, 1996	*Windows on the Past: Falmouth's Architectural Heritage.* Slide lecture delivered to Falmouth Historical Society
November, 1996	*Brewster's Old King's Highway National Register Historic District* Slide lecture delivered to Brewster Historical Society
November, 1997	*Brewster's Factory Village National Register Historic District* Slide lecture delivered to Brewster Historical Society
February, 1997	*Gray Shingles and Pink Granite: The Architectural Heritage of West Falmouth* Slide lecture delivered to Falmouth Historical Society
September, 1998	*Between the Forest and the Bay: A History of West Falmouth as Revealed in its Historic Buildings and Landscapes.* Published by West Falmouth Civic Association.
December, 1998	*Preserving Cape Cod.* Slide lecture delivered to Annual Meeting of Historic Highfield.
April, 1999	*Windows on the Past: Cape Cod's Architectural Heritage.* Slide lecture delivered to Historical Society of Old Yarmouth and Society for the Preservation of New England Antiquities.
May, 1999	*A Step Back in Time - A tour of historic Wings Neck - Hidden Architectural Treasures.* Afternoon tour sponsored by the Bourne Society for Historic Preservation.
November, 1999	*Eastham Through Time* Slide lecture delivered to Eastham Historical Society Annual Meeting.
August, 2000	*Windows on the Past: Cape Cod's Architectural Heritage.* Slide lecture delivered to Orleans Historical Society.
August, 2000	*Preserving the Old Village* Slide lecture delivered to Annual Meeting of Chatham Old Village Ass.
September, 2000	*The Architecture of Falmouth's South Sea: Waquoit and Falmouth Heights* Slide lecture delivered to Falmouth Historical Society 99th Annual Meeting.

Alliance to Protect Nantucket Sound

396 Main St., Suite 2 Hyannis, MA 02601 508-775-9767
www.saveoursound.org

October 5, 2004

Ms. Christine Godfrey
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742

Dear Ms. Godfrey:

This letter is submitted to the U.S. Army Corps of Engineers New England District (USACE/NED) with regard to oil and hazardous substance information that should be included in the Draft Environmental Impact Statement (DEIS) currently being prepared to evaluate environmental impacts associated with the construction and operation of an offshore wind-powered electric generating facility proposed by Cape Wind Associates, LLC in Nantucket Sound.

This letter is respectfully submitted by the Alliance to Protect Nantucket Sound. We are pleased to provide input to USACE/NED regarding this important issue that thus far appears to have been ignored by the applicant in the DEIS preparation process. The issue of oil and hazardous substances impacts to Nantucket Sound and surrounding areas is of great concern to the Alliance and the public. Indeed, there are numerous examples of petroleum-based spills of much smaller quantities that have resulted in significant adverse impacts to coastal and marine environments and communities. The purpose of this report is to ensure that the issue is adequately addressed in the DEIS and factored into the Corps' decision making under section 10.

Accompanying this letter is a report we submit for your review and action. This report details reasonable risks and, correspondingly, real potential for impacts to the Nantucket Sound coastal and marine environment posed by the proposed storage of approximately 41,000 gallons of dielectric cooling oil and diesel at the electrical service

platform (ESP), as well as the lube oils and glycol/water mixtures at the ESP and wind turbine generator units.

In addition to identifying the risks and potential impacts associated with oil and hazardous substances at the proposed offshore wind-generated power plant, the accompanying report provides specific recommendations for studies and information that should be conducted or gathered with the results of these efforts reported in the DEIS.

For example, in response to the risk of bulk oil spillage and the potential for spill impacts (e.g., mortalities to invertebrates, fish and birds as well as closures to aquaculture, fishing, boating and beach recreation activities in Nantucket Sound following a spill), predictive modeling studies are recommended to be conducted, using either of two internationally-recognized fate and effects spill models. These models integrate important spill information and data, such as spill source, spill scenarios, fate and pathway of spilled materials, and local natural and economic resources at risk, to predict the reasonable effects of a spill release from the proposed offshore facility. Further, a spill prevention, control and countermeasure plan is recommended (and required per 40 C.F.R. Part 112) in the report along with a battery of specific response-related questions to address spill prevention and response issues. To address the risk of resuspending and redistributing buried sediments historically contaminated with oil and hazardous substances during offshore facility construction, the accompanying report describes specific studies and related issues that should be conducted and addressed in the DEIS.

As discussed in the enclosed report, it is clear that the bulk transformer and diesel oils stored on the electrical service platform (approximately 41,000 gallons) and the other miscellaneous industrial chemical products stored on the platform and the wind turbine generators pose a reasonable and significant threat to the natural resources and economies of Nantucket Sound and surrounding coastal environs. Not considering

spill and sediment resuspension/redistribution impacts would result in an incomplete environmental impact analysis.

Thank you for your attention and further consideration regarding these matters. If you have any questions regarding this correspondence, please contact me.

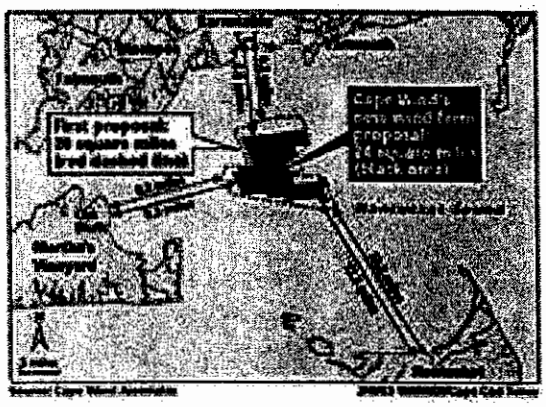
Very truly yours,

Sue Nickerson, Executive Director
Alliance to Protect Nantucket Sound

cc: Senator Edward Kennedy
Senator John Kerry
Congressman William Delahunt
Governor Mitt Romney
Massachusetts Attorney General Thomas Reilly
Karen Kirk Adams, U.S. Army Corps
James Connaughton, Council on Environmental Quality
Dinah Bear, Council on Environmental Quality
Horst Greczmiel, Council on Environmental Quality
Elizabeth Higgins, U.S. Environmental Protection Agency
Timothy Timmerman, U.S. Environmental Protection Agency
Vernon Lang, U.S. Fish and Wildlife Service
Edward LeBlanc, U.S. Coast Guard
Barry Drucker, Minerals Management Service
Susan Snow Cotter , Massachusetts Coastal Zone Management Office
Jack Terrill, National Marine Fisheries Service
Al Benson, U.S. Dept. of Energy
Ellen Roy Herzfelder, Executive Office Environmental Affairs

Mary Griffin, Executive Office Environmental Affairs
Arthur Pugsley, Massachusetts Environmental Policy Act Office
Phil Dascombe, Cape Cod Commission
Truman Henson, Cape Cod Commission
Beverly Wright, Wampanoag Tribe of Gay Head Indians
John Pagini, Nantucket Planning and Economic Development Commission

Proposed Wind-Generated Power Plant in Nantucket Sound: Oil and Hazardous Substance Information Needs



A Report

Prepared For:

Alliance to Protect Nantucket Sound, Incorporated
Hyannis, Massachusetts

Prepared By:

Timothy J. Reilly,
Principal
Lighthouse Technical Consultants, Incorporated
Rockport, Massachusetts
And
Mark Reed, Senior Scientist, and Boye A. Høverstad, Research Scientist
SINTEF Materials and Chemistry, Trondheim, Norway

October 5, 2004

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Cover Page Photograph/Image Credits: Offshore Wind Turbine Generators: courtesy of GE Wind Energy and U.S. Department of Energy's Wind and Hydropower Technologies Program (web link: http://www.eere.energy.gov/windandhydro/wind_offshore.html); Map of Proposed Cape Wind Project Preferred Alternative site: courtesy of James Warren, Cape Cod Times (web link: http://www.capecodonline.com/special/windfarm/)

1.0 INTRODUCTION

This report has been prepared for the Alliance to Protect Nantucket Sound by Lighthouse Technical Consultants, Incorporated (in association with SINTEF Materials and Chemistry) in regard to oil and hazardous substance information that should be included in the Draft Environmental Impact Report (DEIR)/Draft Environmental Impact Statement (DEIS)/Development of Regional Impact (DRI) developed to evaluate environmental impacts associated with the construction and operation of an offshore wind-powered electric generating facility proposed by Cape Wind Associates, LLC in Nantucket Sound. It is the intent of this report to provide the Alliance to Protect Nantucket Sound with substantive information on oil and hazardous substance issues associated with the proposed wind-generated power plant to facilitate meaningful input on such issues to the U.S. Army Corps of Engineers New England District (USACE/NED) during its environmental impact analysis of this proposed facility.

1.1 Oil and Hazardous Substances at Proposed Offshore Wind-Generated Power Plant

It is our understanding that the following oil and hazardous substances may be stored and used at the proposed wind-generated power plant:

At Electrical Service Platform:

- 4 x 10,000 gallon storage tanks of dielectric cooling oil for the Main (step-up) transformers;
- 1 x 1,000 gallon storage tank of diesel oil for Emergency Diesel Generator; and
- Small quantities of greases and lube oils for pumps, fans, air compressor.

In each Wind Turbine Generator:

- 190 gallons of gear oil in gear box;
- Mineral oil for hydraulics (unspecified quantity); and
- Water/Glycol mixture for cooling system (unspecified quantity).

1.2 Potential for Impacts from Oil and Hazardous Substances

The proposed quantities of bulk-stored oil and hazardous substances at the offshore wind-generated power plant's Electrical Service Platform (i.e., 41,000 gallons of diesel and dielectric cooling oils) are of a volume that, if catastrophically released, may cause

serious injuries to coastal and marine natural and economic resources. In fact numerous examples exist of petroleum-based spills that have resulted in significant impacts to coastal and marine environments and have involved much less oil than the bulk amounts stored on the proposed Electrical Service Platform. Examples of such oil spill incidents include the 1998 Tesoro oil spill in Oahu, Hawaii involving just under 5,000 gallons (see www.darp.noaa.gov/southwest/tesoro/pdf/tes-frp1.pdf for additional impact information); the Dredge Stuyvesant spill that released 2,000 gallons into Humboldt Bay, California in 1999 (see: www.incidentnews.gov/incidents/incident_3.htm for additional information); and the 2000 Fort Lauderdale Mystery Spill offshore of southwest Florida that released just over 20,000 gallons about 10 miles offshore (see www.darp.noaa.gov/library/pdf/flfdarp.pdf for details of impacts). Some examples of impacts from spills have included:

- Mortalities to (especially) egg and larval fish and invertebrate life stages in the water column and, in some cases, substantial juvenile and adult life stages;
- Mortalities to bird resources coming into contact with spilled oil slicks and beached oil;
- Chronic contamination of intertidal sediments (especially in wave-sheltered mudflats and marshes) that can persist on an order of years to decades as in the case of continuing contamination of the West Falmouth marsh sediments near Woods Hole, MA contaminated by the 1969 *Florida* Barge diesel spill incident (Carlowicz 2003));
- Beaches closed to recreational use during cleanup operations;
- Finfish and shellfishing closures; and
- Closures of harbors to boat traffic during spill response operations.

The fate and effects of spills resulting from the proposed offshore wind-generated power plant could be predicted through modeling studies. Using modeling as an environmental impact assessment tool is described in Section 2.1 of this report.

Given the 1) proximity of the proposed wind-generated power plant on Horseshoe Shoal to shipping lanes; 2) potential for extreme storm events south of Cape Cod (e.g., hurricanes); and 3) the rich marine ecology and economic importance of Nantucket Sound, the DEIR/DEIS/DRI should fully consider the impacts of catastrophic releases of these bulk-stored substances on the habitats and natural resources of Nantucket Sound. Not considering such spill impacts would result in an incomplete environmental impact analysis. New England's recent experience with spills in and near shipping lanes in Southern New England (e.g., January 1996 *North Cape* oil spill incident on Rhode Island outer coast and April 2003 Bouchard *Barge 120* oil spill in Buzzard's Bay) reminds us that spills of bulk oil and hazardous substances can and do occur in our coastal waters with substantial impacts to marine/coastal resources and economies (e.g, fishing, boating, and Cape and Islands tourism).

Additionally, the DEIR/DEIS/DRI should address contaminant impacts associated with re-suspended (previously-contaminated) sediments during wind-generated power plant and submarine transmission line installation and ongoing facility operations.

1.3 Report Contents

In the following sections of this report, types of information that must be added to the DEIR/DEIS/DRI are identified and described with regards to:

- Oil and Hazardous Substance Releases (Section 2.0)
  - Spill Impact Modeling (Section 2.1)
  - Spill Prevention, Control and Countermeasures (Section 2.2)
- Further contamination and impacts associated with re-suspended benthic and intertidal sediments (Section 3.0).

These information needs are summarized in Table One. Conclusions from this analysis are presented in Section 4.0, and references are found in Section 5.0.

Finally, although the contents and comments in this report focus on the preferred alternative (i.e., the wind-generated power plant located at Horseshoe Shoal and the preferred submarine routing landfall located at base of New Hampshire Avenue in Yarmouth), the same informational requirements for oil and hazardous substance environmental considerations, with suitable site-specific variations, must be applied to all considered Cape Wind offshore project alternative sites before they can be considered to have been adequately investigated.

2.0 OIL AND HAZARDOUS SUBSTANCE RELEASE ISSUES

Given the intended transport and storage of bulk quantities of oil and hazardous substances at the proposed offshore wind-generated power plant facility, the DEIR/DEIS/DRI for this project should address environmental impacts resulting from potential releases of these bulk materials as well as strategies for preventing, controlling and responding to such spills. This chapter describes the types of information that the DEIR/DEIS/DRI should address regarding predictive spill impact modeling studies (Section 2.1) and spill prevention control and countermeasure planning (Section 2.2).

2.1 Spill Impact Modeling

Computer-based modeling is commonly used to determine the potential environmental and economic impacts of oil and hazardous substance spills resulting from proposed facilities housing bulk oil and hazardous substances, such as the Electrical Service Platform and (potentially) the Wind Turbine Generators (if mineral oils and glycol are stored in bulk amounts). Generally, models follow a risk assessment paradigm in order to predict impacts from a spill. Accordingly, data inputs and components of a spill model include:

- *Spill Source*: What was spilled? This question is addressed by knowing the type, quantity, chemical composition, physical and toxicological properties of spilled material(s);

- *Spill Scenario*: How, when and where did the spill occur? Location of release(s), release details (i.e., duration of release, quantity of release, was release above water surface or underwater), and time of year of release (seasonal distribution and abundance of natural resources such as birds and fish in area) are addressed when modeling spill scenarios. Because spills have different impacts at different times of the year (due to dynamic ecosystem conditions such as spawning, migratory habits of fish, birds, marine mammals, sea turtles, etc.) understanding the impacts of future potential spills at the wind-generated power plant requires spill modeling scenarios to be developed for each month of the year;

- *Fate/Pathway of Spilled Materials*: Where did the spilled oil and/or hazardous substance go following spillage? Did it volatilize? Spread on the sea surface? Mix in the water column? Bind to sediments? Come into contact with other marine resources? Etc. Factors used to model the fate or pathway of spilled oil and chemicals include (*inter alia*):
  - Physical and chemical properties of spilled substance;
  - Bathymetry of area;

- Coastal Geomorphology (shoreline types) in area;
- Atmospheric conditions (esp. wind and temperatures) at time of release
- Currents in area at time of release; and
- Total suspended sediment load

- *Resources at Risk*: What resources are in the area of a spill trajectory at a given time of the year, and are these resources vulnerable and sensitive to spilled substances? The types of coastal and nearshore resources in Nantucket Sound have varying vulnerability (i.e., susceptibility to spill exposure) and sensitivity (i.e., potential for injurious effects from spilled oil, if exposed) based on location, life history and behavioral habits of species and resources. Accordingly, it is important to understand which species and populations are vulnerable and sensitive, as well as locations of sensitive shoreline environments (e.g., marshes and tidal flats), that are at risk to impacts from spills. Data sets such as the National Oceanic and Atmospheric Administration's (NOAA) Office of Response and Restoration (ORR) Environmental Sensitivity Index (ESI) atlas for Massachusetts (and, particularly, the Nantucket Sound area) provide a good overview of the location, sensitivity, seasonality and vulnerability of at risk resources and coastal environments in the area (more information regarding ESI atlases and ordering maps can be obtained from NOAA's ESI website at: http://response.restoration.noaa.gov/esi/esiintro.html). This ESI atlas resource is useful to spill response planning. However, the ESI atlas does not provide necessary population data for species of interest. Specific species and population data can be obtained from the Natural Resource Damage Assessment Model for Coastal and Marine Environments (NRDAM/CME) Type A Model Database for the Nantucket Sound area (see Table 1 and below).

- *Effects of a Spill Release*: If exposed, directly or indirectly, vulnerable and sensitive habitats, coastal/nearshore resources and the public's use of these resources (i.e., for aquaculture, fishing and other commercial/recreational purposes) may be significantly injured or impaired from a spill occurring from the wind-generated power plant facility. Such impacts include lethal and sublethal impacts to coastal organisms and economic impacts to commercial and recreational activities. Certain models (see below) have commonly been used to predict spill impacts to exposed resources and, in certain models, quantify the level of injuries and damages resulting from the spill.

There are a number of models (and underlying data) that may be used for predicted spill impact modeling purposes. NOAA's Office of Response and Restoration (ORR) has

several models used in spill planning and assessment (see weblink at: http://response.restoration.noaa.gov/software/software.html) including:

- GNOME The General NOAA Oil Modeling Environment (GNOME) is an oil trajectory model that predicts how wind, currents, and other processes might move and spread oil that has spilled on the water.

- ADIOS The Automated Data Inquiry for Oil Spills (ADIOS) program is an oil weathering model that runs on personal computers and incorporates an extensive database of crude oils and petroleum products.

- TAP The Trajectory Analysis Planner (TAP) shows how spilled oil might move and spread within a particular body of water, and how it might affect sensitive sites, such as seabird rookeries or marine mammal hauling grounds.

Though these software programs from NOAA are useful in generally understanding some of the impacts from a potential release from the wind-generated power plant (especially, when used in concert with ESI maps), they do not adequately describe egg/larval and other pelagic losses, nor QUANTIFY mortalities to marine and coastal resources (i.e, biomass of resources killed as a result of a spill). Such quantification of potential losses is critical to understanding the potential risks and impacts of bulk oil and hazardous substance storage and spillage at the wind-generated power plant, respectively.

In order to quantify marine resource losses resulting from a future spill incident at the wind-generated power plant, a model must be used that effectively INTEGRATES spill source, scenario, fate and manifested toxicological effects. Such models are commonly used in oil spill response and planning. At least two models are available for this purpose: SIMAP and OSCAR/NRDAM, both developed as updated versions of the U.S. Department of Interiors Natural Resource Damage Assessment Model for Coastal and Marine Environments (NRDAM/CME; also known as the Type A Model). These models have been developed to model – and quantify – spill impacts to coastal and nearshore resources. More information about the SIMAP model can be found at the following web link: http://www.appsci.com/simap/simap.htm . Information on OSCAR is available at the web link: http://www.sintef.no/units/chem/environment/oscar.htm.

It is specifically recommended that one of these models be used to develop a reasonable spill scenarios, including a worst-case spill scenario – i.e., a rapid, catastrophic release of all bulk stored transformer and diesel oils (totaling approximately 41,000 gallons) into Nantucket Sound. Spill impact modeling based on these scenarios should be conducted during each month of the year to determine impacts to dynamic populations of both resident and migratory species.

The resulting modeling effort should report the following types of information and include:

- Spill scenarios used in modeling (including a worst-case scenario) and rationale for selection
- Description and appropriateness of algorithms used in modeling
- Chemical constituents of diesel, dielectric cooling (transformer), and gear oils used in analysis (a wide variety of dielectric cooling oils exist, significantly impacting the behavior and toxicity of such substances, if spilled – see McShane (2000) for a discussion of types and environmental considerations associated with dielectric cooling oils)
- Description of model implementation (methodology)
- Description and appropriateness of datasets used in modeling, including:
  - Currents
  - Wind speeds and directions
  - Temperature
  - Species and population data
  - Toxicological data
- Results of analysis FOR EACH SCENARIO:
  - Water and sediment contaminant concentrations
  - Shoreline impacts
  - Species-specific lost biomass
  - Lost somatic (foregone) production due to mortalities from spill.

In summary, a spill fate and effects model (such as SIMAP) determines and quantifies potential impacts from a spill release by modeling 1) representative spill sources and scenarios (source), 2) how it travels through the environment once spilled (fate), 3) what resources it comes into contact with following the spill (exposure), and 4) calculates the manifested effect of those exposures (effects). It is this spill impact modeling that needs to be accomplished in a defensible and comprehensive manner for the Cape Wind project and included in the DEIR/DEIS/DRI. Modeling information needs are summarized in Table One.

2.2 Spill Prevention Control and Countermeasure Plan

The DEIR/DEIS/DRI should state that since more than 1,320 gallons of oil are proposed to be at the wind-generated power plant (especially, the Electrical Services Platform), a Spill Prevention Control and Countermeasure (SPCC) Plan will need to be developed for this proposed offshore facility. The SPCC plan should satisfy the requirements for such plans found at 40 CFR 112 (Oil Pollution Prevention and Response; Non-Transportation-Related Onshore and Offshore Facilities).

Further, the DEIR/DEIS/DRI should discuss whether the facility is designed to handle a catastrophic release (i.e., 41,000 gallons of transformer and diesel oils) of stored products:

- What types of tanks will be used at the Electric Service Platform (ESP)?
- What types of secondary containment have been designed to capture released oil and what is the volume of the secondary containment chambers?
- What is the anticipated frequency of transporting bulk oils to the ESP? What volumes will be transported? Under what sea states/weather conditions will such transports of bulk oils be aborted?
- Will there be special precautions/actions taken to reduce risk of spillage during extreme storm events?
- What types of spill response equipment (i.e., containment booms and sorbents) will be on-site at the ESP in event of an uncontained oil release? If not stored on-site, where will this response equipment be stored? Will there be sufficient quantities and types of equipment to contain catastrophic releases?
- How will leaks be observed and reported when no one is on-site at time of spill?
- What percentage of time is the wind-generated power plant (especially, the ESP) un-manned?
- Who will be the retained spill response contractor for spills from the wind-generated power plant?
- Given the remoteness of the wind-generated power plant, what is the expected response time for personnel responding to a spill at this offshore facility?
- Have there been spills reported from similar offshore wind-generated power plants in the past? If so, how did these spills occur? How will these incidents not occur in the proposed Cape Wind facility?

3.0 SEDIMENT RESUSPENSION AND REDISTRIBUTION RELATED TO OIL AND HAZARDOUS SUBSTANCES

The construction of the wind-generated power plant on Horseshoe Shoal and the placement of the submarine transmission line between the ESP and Yarmouth will result in resuspension of unconsolidated benthic and intertidal sediments (clays, silts, sand and gravel). Also, sediments may become resuspended and redistributed during facility operation due to continuing sediment scour from bottom currents. These sediments may have been previously contaminated by many possible sources, including past industrial accidents (spills), bilge releases, permitted discharges or atmospheric deposition.

Resuspension and redistribution of contaminated sediments that have been buried over time can result in new exposures of previously deposited oil and hazardous substances to existing intertidal, nearshore, benthic and demersal biological resources, essentially mimicking a new oil and chemical release.

Accordingly, the DEIR/DEIS/DRI should address the nature, extent and degree of environmental impacts associated with contaminated sediment resuspension and redistribution from construction and facility operation activities.

The nature, spatial extent and degree of environmental impacts associated with contaminated sediment resuspension will depend on a number of factors, including:

- Trenching method for transmission line and inter-array cables;
- Wind tower monopile driving method;
- Benthic and intertidal conditions, for example:
  - Sediment matrix composition and size throughout site,
  - Site bathymetry
  - Unique site characteristics that may result in substantial sediment resuspension (e.g., large "sand waves")
  - Wind and current patterns, and
  - Wave patterns (especially at landfall)
- Water column stratification (affects vertical and horizontal sediment dispersion;
- Degree of contamination of sediments throughout site:
  - Target contaminants of concern, for example:
    - Petrogenic hydrocarbons (especially, PAHs)
    - Heavy metals
    - Chlorinated organics (e.g., PCBs, DDT, DDE, Dioxins, etc.)
  - Vertical contaminant profile in sediments
  - Horizontal extent of contamination

- Appropriate Sediment Quality Guidelines to determine magnitude of sediment contaminant issue.

The DEIR/DEIS/DRI should address these factors and others, which allow the public to reasonably evaluate the environmental impacts of resuspending previously contaminated sediments during wind-generated power plant and submarine transmission line construction activities. It is presumed that a set of statistically representative sediment samples (surface and core samples) will be collected and analyzed for contaminants of reasonable concern using scientifically accepted field and laboratory protocols (i.e., involving an approved Quality Assurance Project Plan, QAPP).

Due to the three-dimensionally expansive geographic nature of this project within the benthic and intertidal zones, it is imperative that a clear rationale be presented in the DEIR/DEIS/DRI that describes the statistical reliability and validity of the selection of sediment sampling locations AS WELL AS the logic behind the vertical (sub)sampling of core samples for contaminant of concern concentrations. The extent of vertical (sub)samples should be reasonably related to the potential for exposure during construction operations.

The DEIR/DEIS/DRI should include the procedures and methodologies used in field sediment sampling and analysis, including quality assurance and quality control considerations. This may be added to an appendix to the DEIR/DEIS/DRI, as appropriate.

Using information described here, modeling contaminated sediment redistribution resulting from construction activities can be an effective approach to clearly communicating the nature, extent and degree of this disturbance. Such predictive modeling tools may be used with results communicated in the DEIR/DEIS/DRI.

Finally, an analysis of the degree and extent of ongoing sediment resuspension and redistribution during facility operations (e.g., due to sediment scour resulting from bottom currents) should be conducted and reported in the DEIR/DEIS/DRI.

A summary of information needs regarding sediment resuspension and redistribution can be found in Table One.

Table One Summary of Information Needs and Requirements Regarding Oil and Hazardous Substance Issues that Should Be Addressed in Cape Wind DEIR/DEIS/DRI		
Information Requirement	**Description of Information Requirement**	**Rationale for Needing this Information to Evaluate DEIR/DEIS/DRI**
Accidental Releases of Oil and Hazardous Substances/Spill		
Sources		
Types of oil and hazardous substances	List the types of oil and hazardous substances on site.	Essential information for determining potential spill impacts.
Physical, chemical and toxicological properties of bulk oil and hazardous substances on site.	The physical, chemical and toxicological properties of each substance should be identified (esp. bulk stored substances such as dielectric cooling oil and diesel). This includes chemical composition by GC/MS (especially, with respect to total polyaromatic hydrocarbons), density, viscosity, and toxicity. Other useful parameters include wax and asphaltene content, which affect emulsification potential.	Physical and chemical properties of potentially spilled substances largely affect their fate in the marine environmental with respects to volatilization, mixing in the water column, remaining as a slick, etc. Concentrations of certain types of compounds within oil have significant impacts on toxicological effects of these substances down to the low parts per billion range (i.e., polyaromatic hydrocarbons). Therefore, it is important to have chemical analytical information of potential spilled oil and hazardous substances to assess the potential toxicity of such spilled substances.
Quantities stored on-site	List the known volumes of oil and hazardous substances stored/used on site.	Volume of stored oil and hazardous substances will allow for appropriate environmental impact spill modeling.
Storage mode and locations	Described the location and mode of storage (i.e,. type and volume of storage tanks) on site.	Location of oil and hazardous substances are key inputs to spill modeling.
Feasible Release/Spillage Scenarios		
Identification of release scenarios	A set of possible release scenarios, with information on probability of occurrence.	The risk of impacts from the proposed project depends on the probability of the accident taking place, and the impacts of the accident. Omitting conceivable scenarios from the report should have justification in terms of their low risk.
Scenario details	Data for each selected scenario should include location, substance spilled, amount and duration of release. Due to seasonal marine ecosystem/population dynamics in	The conditions of a release (location, duration of release, season, material and quantities involved) will significantly affect the modeled spill impact results. Scenario details

	Nantucket Sound, such scenarios should be run for each month of the year to analyze impacts to significant species assemblages present. Finally, a catastrophic (complete, instantaneous) release during an extreme storm event should be conducted.	allow an analysis of reasonable possible spill scenarios.
Modeled Fate of Released Substances		
An oil spill model that predicts fate of spilled oil in Nantucket Sound using local environmental conditions and proposed project specifications	An accepted oil spill model (such as SIMAP, OSCAR/NRDAM, or equivalent) should be used to model the fate of spilled oil and hazardous substances using the scenarios and bulk-stored substances (i.e., dielectric cooling oil, gear oil and diesel fuel) listed above. Results from oil fate modeling should include water and sediment contaminant concentrations, and extent and degree of shoreline impacts. A description of the appropriateness of the algorithms used in the model and the implementation methodology of the model should be provided as part of the modeling report.	In order to understand the risks from an oil spill, it is necessary to determine the fate of oil and hazardous substance(s) once spilled.
Databases necessary to run oil spill fate prediction model in Nantucket Sound, including bathymetry, habitats, winds and currents.	In addition to the physical and chemical properties of spilled substance(s), receiving environmental data are required to predict oil fate under defined scenarios, including: Bathymetry: a topographic map of the seafloor in a gridded electronic format of relatively high resolution (e.g., 1 km^2), including projection specifications; Habitats: A gridded system identical to the topographic bathymetry map of seafloor and shoreline habitats; and Wind and Currents: For simulation of accidental releases, extended period of wind and current data (approx. 10 years) should be provided to enable statistically rigorous calculations. Wind and current data for modeling a release during an extreme storm event should also be collected.	Bathymetric data allows for modeling sedimentation of dissolved and dispersed oil, and is also vital for sediment transport modeling. Habitat data allows for modeling of exposure to shoreline habitats of varying vulnerable and sensitivity to spilled substances. Wind and current data are drivers in determining oil and sediment transport. Wind and waves also affect mixing of oil from the surface into the water column, so the wind used as input to an oil spill simulation is central to predicted spill fate.
Modeled Effects of Release Scenarios on Resources at Risk from Accidental Spillage of Oil and Hazardous Substances		

An oil spill model that predicts effects of spilled oil on Nantucket Sound natural resources using local and proposed project conditions	An accepted oil spill model (such as SIMAP) should be used to model the effects of spilled oil and hazardous substances using the scenarios, bulk-stored substances (i.e., dielectric cooling oil, gear oil and diesel fuel), and corresponding fates described above. Results from oil fate modeling should include quantitative predictions of species-specific mortalities (in kilograms of biomass lost). Additionally, lost somatic (i.e., body) growth as a result of these mortalities should be calculated using modeling (i.e., foregone production). A description of the appropriateness of the algorithms used in the model and the implementation of the model should be provided as part of the modeling report.	Modeled losses of Nantucket Sound biological assemblages resulting from reasoned spill scenarios provide the public an opportunity to understand and evaluate potential environmental impacts in the event a spill occurs at the wind-generated power plant. Modeled losses could be calculated for invertebrates, fish, birds, reptiles, mammals and lost beach use. Impacts from spills to sensitive shoreline/nearshore habitats could also be determined (i.e., tidal flats, marshes, aquaculture sites)
Databases necessary to run oil spill effects prediction model in Nantucket Sound, including biological and beach use databases.	Databases that provide biological and beach use information to determine what natural resources are at risk from the modeled spill scenarios are used to generate predictive mortalities and lost beach use resulting from an oil spill, using accepted toxicological and public use algorithms. A biological database should contain monthly mean abundance by species and habitat type. Moreover, the database should enumerate benthic, pelagic, nearshore and intertidal Nantucket Sound biological resources present, in a format such as the U.S. Department of Interior's Natural Resource Damage Assessment Model for Coastal and Marine Environment (NRDAM/CME) biological database, or as used in SIMAP, with updates reflecting any project-specific biological surveys conducted.	The biological and beach use databases are used to support the modeling of species-specific impacts resulting from a modeled release of oil or hazardous substances from the wind-generated power plant.
Spill Prevention Control and Countermeasure (SPCC) Strategies		
SPCC Plan		
Spill Prevention Control and Countermeasure (SPCC) Plan	An SPCC plan is required to address spill prevention and response strategies for those substances with volumes greater than 1,320 gallons	SPCC plans required per 40 CFR 112

	that are stored in larger than 55-gallon drums.	
	Miscellaneous Considerations	
Other spill prevention and response issues to address in DEIR/DEIS/DRI	Example SPCC issues that should be addressed in the DEIR/DEIS/DRI - Type, quantity and location of oil and hazardous substances on-site. - Types of tanks used at the Electric Service Platform (ESP). - Types of secondary containment designed to capture released oil and volume of the secondary containment chambers. - Anticipated frequency of transporting bulk oils to the ESP. - Volumes to be transported. - Under what sea states/weather conditions will such transports of bulk oils/hazardous substances be aborted? - Special precautions/ actions taken to reduce risk of spillage during extreme storm events. - Types of spill response equipment (i.e., containment booms and sorbents) on-site at ESP in event of an uncontained oil release. - If not stored on-site, where will this response equipment be stored? - Will there be sufficient quantities and types of equipment to contain releases? - Leak detection systems. - What percentage of time is the wind-generated power plant (especially, the ESP) un-manned? -Who will be the retained spill response contractor for spills from the	These spill prevention, control and countermeasure issues allow the public to better understand actual risks of spillage of oil and hazardous substances at the proposed wind-generated power plant facility.

	wind-generated power plant? - Given the remoteness of the wind-generated power plant, what is the expected response time for personnel responding to a spill at the wind-generated power plant? - Have there been spills reported from similar offshore wind-generated power plants in the past? If so, how did these spills occur? - How will these incidents not occur in the proposed Cape Wind facility?	
Sediment Contamination and Resuspension Issues		
Trenching method for transmission line and inter-array cables	State which method will be used for trenching and laying transmission line. State what the depth/width profile of the dug trench will be. Include technical data for the chosen trenching method, including: - Description of jet plow - Estimates on the ratio of backfill to spreading.	Trenching method employed can have a significant effect on sediment resuspension and spreading.
Wind Tower Monopile Driving Methods	State which method will be used for driving monopiles. Include technical data for the chosen driving method, including: - Description of monopile driver - Estimates on the magnitude of sediment spreading during driving	Monopile driving may result in significant resuspension and spreading
Benthic/Intertidal conditions	Sea floor and intertidal conditions, including: - Sediment composition - Bathymetry - Unique site characteristics (e.g., sand waves) - Wind and current patters - Water column stratification - Degree of sediment contamination (PAH, heavy metals, chlorinated organics). - Vertical and horizaontal extent of contamination.	These benthic conditions can significantly affect the degree and extent of resuspension and redistribution of sediments The nature and degree of contamination of sediments is important to understanding the scope of pollutant redistribution and exposure to coastal and aquatic organisms.
Quality assurance and study design considerations	Demonstrate that sediment samples collected are statistically representative of the study areas (i.e., explain rationale for sediment sample	Given the expansiveness of the study area, site conditions can vary significantly within the site. Accordingly, it is important that

	locations). Demonstrate that field and laboratory procedures and analyses follow generally accepted methodologies.	sediment samples collected are representative of field conditions. Further field and laboratory methods and procedures should follow accepted methodologies in order to be useful in determining re-suspension and contamination potential from disturbed benthic and intertidal sites.
Analysis of resuspension and redistribution of benthic and intertidal sediments during proposed facility operations	A scour analysis of bottom and intertidal sediments at Horsehoe Shoal and the transmission line route should be conducted to determine the degree and extent of sediment resuspension and redistribution during offshore facility operations.	An understanding of the degree and extent of sediment resuspension and redistribution during proposed facility operations is important to understanding the extent of previously buried contaminated sediment exposure to resident and migratory biota *on an ongoing basis*.
Sediment Quality Guidelines (SQG)	Guidelines for the toxicity of contaminated sediments (e.g., Long et al., 1995) are useful in comparing to sediment contaminant concentrations in Nantucket Sound sediment samples. Such SQGs should be included with sediment sample analytical results.	SQG's provide one way of determining the relative toxicity of sediments.

4.0 CONCLUSIONS

Based on information presented in this report, it is clear that the bulk transformer and diesel oils stored on the Electrical Service Platform (approximately 41,000 gallons) and the other miscellaneous industrial chemical products stored on the ESP and the Wind Turbine Generators pose a reasonable threat to the natural resources and economies of Nantucket Sound and surrounding coastal environs. Major threats posed by these oils and hazardous substances include the potential for spillage into Nantucket Sound and the resuspension and redistribution of contaminated sediments, resulting in new exposure to historically buried pollutants.

Numerous examples exist of petroleum-based spills that have resulted in significant impacts to coastal and marine environments and have involved much less oil than the bulk amounts stored on the proposed Electrical Service Platform. Some examples of impacts from spills have included:

- Mortalities to (especially) egg and larval fish and invertebrate life stages in the water column and, in some cases, substantial juvenile and adult life stages;
- Mortalities to bird resources coming into contact with spilled oil slicks and beached oil;
- Chronic contamination of intertidal sediments (especially in wave-sheltered mudflats and marshes) that can persist on an order of years to decades as in the case of continuing contamination of the West Falmouth marsh sediments near Woods Hole, MA contaminated by the 1969 *Florida* Barge diesel spill incident (Carlowicz 2003));
- Beaches closed to recreational use during cleanup operations;
- Finfish and shellfishing closures; and
- Closures of harbors to boat traffic during spill response operations.

The fate and effects of spills resulting from the proposed offshore wind-generated power plant could be predicted through modeling studies.

This report lists a number of types of information and modeling studies that, if conducted, will address the potential environmental impacts posed by these oil and chemical threats. It is believed that by including this information in the DEIR/DEIS/DRI for the Cape Wind Project, the public will be able to most effectively and expeditiously evaluate the actual environmental impacts posed by the Cape Wind project on the natural resources and economy of Nantucket Sound.

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The New York Times

1/12/05 N.Y. Times A17
2005 WLNR 406101

New York Times (NY)

January 12, 2005

Section: A

Much Heat and a Deep Split Over a Cape Cod Wind Farm

CORNELIA DEAN

Four formal hearings are held on proposal to install giant wind farm in offshore waters south of Cape Cod; plans call for 130 turbines in 24-square-mile grid off Cape; consensus appears to be as far away as ever, with advocates and opponents deeply divided on project and vast majority still ambivalent; map (M)

CONCORD, Mass., Jan. 11--After four formal hearings, one so packed with passionate speakers that it had to be reconvened for a second time on Tuesday afternoon, the public has just about had its say on a proposal to install a giant wind farm in offshore waters south of Cape Cod.

But consensus appears to be as far away as ever, with advocates and opponents deeply divided on the project and the vast majority still ambivalent.

On Tuesday, the project was variously described as relying on outdated technology or as a beautiful alternative to strip mining, the equivalent of industrializing the Grand Canyon or a way to lead the nation once again to independence, this time energy independence.

"Five percent on each side are passionate," and the remaining 90 percent are unsure, Larry Rosenberg, a spokesman for the Army Corps of Engineers, said at a public information session convened on Saturday by the Massachusetts Technology Collaborative, a state agency.

The project, put forward by Cape Wind Associates of Boston, a private concern, involves 130 turbines arranged in a grid occupying 24 square miles of Horseshoe Shoals, in Nantucket Sound. Each tower, with its turbines and blades, would reach 420 feet above the water.

Karen **Adams**, who supervises the permitting process for the corps of engineers, said it would be at least six or seven months before the corps made a decision on the permit. Several state and local agencies have yet to weigh in first, Ms. **Adams** said, "and they all have to say yes" for the permit to be approved.

Although the session on Tuesday was the last public hearing, the public comment period has been extended through Feb. 24.

Advocates said the turbine array would ultimately produce about three-fourths of the electricity now used on Cape Cod, Nantucket and Martha's Vineyard, reducing the region's reliance on fossil fuels. That, in turn, would reduce the risk of global warming, the nation's dependence on imported oil, pollution and pollution-related diseases like asthma, they said. Others said they liked the idea of a wind farm because it would bring jobs to the region, the towers would attract fish and the wind farm might become a tourist attraction.

Opponents say that the project might be a good idea, but that Nantucket Sound is the wrong place. They note that the installation would be the first of its kind in the nation and say that it relies on unproved technology that has run into trouble elsewhere. In particular, they criticized the corps draft environmental impact study for the proposal. As is routine, it was paid for by the project applicant, Cape Wind, an arrangement that opponents said tainted its generally upbeat assessment.

Some opponents, including Senator Edward M. Kennedy, whose family compound in Hyannisport would have a view of the towers, said no projects should be approved in Horseshoe Shoals, or other federal waters, until the nation had a more coherent policy for dealing with offshore lands generally.

Two recent reports, one by the United States Commission on Ocean Policy and the other by the Pew Oceans Commission, made similar recommendations, and last month the White House announced that it would pursue the idea.

Greg Watson, a vice president at the technology collaborative, said his group had not taken a stand on the proposal, even though much of its mission involved the encouragement of renewable energy like wind.

The collaborative organized the session on Saturday "as a neutral broker," Mr. Watson said, because it was important that the public have confidence that the project, if it went forward, was being done right. Otherwise he said, "it will set back the cause of renewable energy."

Map of Massachusetts highlighting site of proposed wind-power project: Plans call for 130 turbines in a 24-square-mile grid off Cape Cod.

---- INDEX REFERENCES ----

INDUSTRY: (Energy Industry Environmental Issues (1EN22); Renewable Energy Sources (1RE65))

REGION: (Massachusetts (1MA15); USA (1US73); Americas (1AM92); New England (1NE37); North America (1NO39))

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Watson; Karen Adams; Larry Rosenberg; Martha; Nantucket; Watson) (Electric Light and Power; Wind; Windmills) (Cape Cod (Mass); Massachusetts)

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MITT ROMNEY
GOVERNOR

KERRY HEALEY
LIEUTENANT GOVERNOR

April 2, 2003

Lieutenant General Robert B. Flowers
Chief of Engineers and Commander
United States Army Corp of Engineers
2600 Army Pentagon
Washington, D.C. 20310-2600

Dear Lieutenant General Flowers:

Knowing of the Administration's desire to have our country develop a comprehensive and robust energy policy, I write to make you aware of the potential for expanded use of offshore wind power to meet the growing electricity needs of the Northeast and how state and federal agencies can cooperate to address some of the concerns that it raises.

I am a strong supporter of renewable energy generally and wind power in particular. It is a clean, low-cost form of renewable energy using resources indigenous to the Northeast. The most productive locations for wind power in the Northeast are offshore where the wind is strong and the waters are shallow. We have already received proposals for projects that, if built, would add more than 1350 MWs of electric generating capacity to our region's supply, and more can be expected.

Although some of these projects would be located within three miles of the state shoreline and fall within the reach of state jurisdiction and permitting, other proposed projects would be located largely outside state jurisdiction in federal waters. These proposed wind power projects have revealed significant gaps in state and federal authority to permit offshore uses and lease ocean space. Federal law allows projects to be sited on a "first-come, first-serve" basis rather than through competitive review of proposals, fails to provide for leases to govern wind power development or for payment of lease fees or royalties by developers, and does not require consultation with the Governors of affected states. Federal law also fails to assign an appropriate role to the nation's leading oceans agency, the National Oceanic and Atmospheric Administration, and does not enable NOAA to direct wind power development to environmentally sound areas. There is an immediate need for federal and state government to take public trust responsibilities for the ocean seriously.

Since offshore wind projects (as well as other offshore facilities such as gas pipelines and radio towers) present certain new and as yet unanswered questions, I have initiated a state "ocean management" process to examine if and how Massachusetts's regulations and procedures are adequate to protect the public interest. While it is not prudent to halt offshore wind projects now undergoing either state or federal agency review, we will complete our regulatory assessment expeditiously so that any new requirements, if needed, can be applied fairly to relevant projects.

One notable example of a project where both state and federal reviews are currently underway is the so-called "Cape Wind" project proposed for the center of Nantucket Sound. I am very concerned that this project will diminish the visual beauty of an important natural resource. This area of our state is critical to the tourist industry, and an essential component of the economy of Cape Cod and the Islands. For this reason, I will be filing at the appropriate time comments with the Army Corps of Engineers opposing the approval of the Cape Wind project. I trust that those comments will receive full and thoughtful consideration by the Corps in its ongoing review proceedings.

Thank you for your attention. I look forward to working with you on gaining greater energy independence for our country and the northeast region.

Sincerely,

M. Tt Romney

cc: Senator Edward Kennedy
Congressman William Delahunt
Mr. Andrew Card
Chairman James Connaughton

THE COMMONWEALTH OF MASSACHUSETTS
OFFICE OF THE ATTORNEY GENERAL
ONE ASHBURTON PLACE
BOSTON, MASSACHUSETTS 02108-1698

THOMAS F. REILLY
ATTORNEY GENERAL

(617) 727-2200

October 17, 2002

Thomas L. Sansonetti
Assistant Attorney General
Environment & Natural Resources Division
U.S. Department of Justice
950 Pennsylvania Avenue, NW
Washington, DC 20530-0001

Gale Norton, Secretary
U.S. Department of Interior
1849 C Street, N.W.
Washington, D.C. 20240

Lieutenant General Robert B. Flowers
Chief of Engineers & Commander
U.S. Army Corps of Engineers
441 G Street, NW
Washington, DC 20314-1000

Re: Off-Shore Wind Projects

Dear Assistant Attorney General Sansonetti, Secretary Norton & General Flowers:

As you are likely aware, a private entity has proposed to build a large wind project in Nantucket Sound. In particular, the proposed project would consist of 170 wind turbines spread over approximately twenty-five square miles four and one-half miles from Cape Cod. The project developer has applied for various approvals, including permits from the Army Corps of Engineers pursuant to Section 10 of the Rivers and Harbors Act of 1899, as amended. The Corps has already issued a permit for one aspect of the project (a test tower) while the rest of the project undergoes environmental review. Based on my review of the applicable law, I do not believe the project may proceed under existing federal law even if it obtains the requested approvals. I am therefore writing to urge you to review this issue; I also urge the Corps in particular to refrain from undertaking any further action relative to off-shore facilities until the issues I will more fully describe below are resolved. Due to the significance of the pending project for the people and environment of Massachusetts, my review of the pending development of Nantucket Sound is on-going.

It is undisputed that the construction of alternative energy projects are not subject to the leasing program established by the Outer Continental Shelf Lands Act for mineral extraction projects. Nor are alternative energy projects covered by the Department of the Interior leasing program that generally applies to private use of "public lands." See Federal Land Policy Management Act, 43 U.S.C. 1701, et seq. In a pending law suit, opponents to the project are arguing that the application for a Section 10 permit for the test tower should not have been considered by the Corps because the project proponents have not acquired a lease or other property interest to occupy the sea bed. Whatever the eventual outcome of this particular litigation, there appears to be a more significant underlying legal question at issue: not whether the granting of a Section 10 authority would be valid absent a leasing program, but whether it would be sufficient to allow a private party to occupy federal land.

The Corps appears to be taking the position that Section 10 authorizes it to grant a private party sufficient authority to occupy the sea bed of the Outer Continental Shelf. Given that the Corps' jurisdiction under Section 10 appears limited (directed at least primarily at whether a project poses a navigational hazard), the legal basis of the Corps' position is not obvious. While the Outer Continental Shelf Lands Act itself refers to the issuance of Section 10 permits by the Corps, I do not see how that reference broadens the scope of the Corps' jurisdiction beyond that provided in Section 10.

In fact, the Department of the Interior apparently agrees that current law does not authorize the siting of alternative energy projects on the Outer Continental Shelf. The Department of the Interior took such a position in recent testimony before Congress. See Testimony of Johnnie Burton, Director, Minerals Management Service, U.S. Department of the Interior to the House Subcommittee on Energy & Mineral Resources, July 25, 2002. Additionally, Representative Barbara Cubin, Chairwoman of the Subcommittee on Energy and Mineral Resources, recently introduced a bill designed to plug the hole in existing law by establishing a leasing program for non-extractive uses of the Outer Continental Shelf. H. 5156. I have enclosed a letter that expresses my support for such legislative efforts, while pointing out many ways in which I believe the legislation needs to be improved. The needed improvements include the creation of a comprehensive process that assures meaningful participation by all interested parties, including the states.

I urge you to reconsider how the federal government should proceed at this time in light of this state of affairs. I do not believe the public is well served when private development of a valuable public resource occurs without clear legal authority; the potential for bad precedent and lasting harm is too great. I am deeply concerned, as well, that the public, directly or through its representatives, has not had an adequate opportunity to consider all the consequences of giving away an invaluable public resource to the very first private developer to seek its use.

I urge you to work together to review the issues and to formulate a unified legal position for the federal government on this question. Based on our expectation that your review will confirm the Department of the Interior's position that additional authority is needed, I also urge you to work with Congress to address this hole in the law. Until Congress has specified what leasing process should be required, I ask the Corps to defer undertaking any further action on pending or future permit applications and to avoid creating undue expectations in project proponents.

Sincerely,

Thomas F. Reilly

cc. Robert M. Andersen, ACE Chief Counsel
Thomas L. Koning, ACE District Engineer
Joseph McInerny, ACE Acting District Counsel
William G. Myers III, Solicitor, DOI
Anthony Giedt, U.S. Attorney's Office

THE COMMONWEALTH OF MASSACHUSETTS
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(617) 725-4000

MITT ROMNEY
GOVERNOR

KERRY HEALEY
LIEUTENANT GOVERNOR

July 26, 2004

Major General Carl Strock
Chief of Engineers and Commander
United States Army Corps of Engineers
2600 Army Pentagon
Washington, D.C. 20310-2600

Dear Major General Strock:

As I am sure you are aware, certain questions have arisen concerning the Commonwealth of Massachusetts' state boundaries – particularly in Nantucket Sound. These boundary questions are significant since they may have an impact on the Commonwealth's jurisdiction over the proposed off-shore wind farm being reviewed by the Army Corps of Engineers (ACE). My Executive Office of Transportation (EOT) is working with the Mineral Management Service (MMS) to clarify this issue.

As you know, the proposed Wind Farm, Cape Wind, is currently proposed to reside entirely in Federal waters. If it is determined that the Commonwealth's boundaries should in fact extend further in to Nantucket Sound, Cape Wind may choose to redraw its proposal or it will need to petition the state for certain regulatory determinations. This may dramatically alter the proposal your agency is currently reviewing.

It is my understanding that ACE is working to complete a draft Environmental Impact Statement (EIS) on this proposal. While we work with MMS to expeditiously address these boundary questions, I respectfully ask that your agency withhold releasing the draft. The unprecedented nature of the proposed project in such an environmentally sensitive area presents an exceptional case that warrants a thorough review of the boundary issue prior to release of the draft EIS. Releasing the draft EIS prior to answering these boundary questions may prove premature and lead to unnecessary confusion if the proposed project is subsequently altered.

I appreciate the thorough review your agency is providing and do not underestimate the amount of work your staff have already invested in this process. However, I do believe these questions are important enough to warrant such action. Thank you for your consideration.

Sincerely,

Mitt Romney

boston.com

THIS STORY HAS BEEN FORMATTED FOR EASY PRINTING

Border bid may imperil wind farm

The Boston Globe

By David Abel and Beth Daley, Globe Staff | February 16, 2005

In a move that could give Governor Mitt Romney more power over the proposed Cape Cod wind farm, state and federal officials appear to have come up with a unique plan: Move the coastline.

State officials said yesterday that a pile of rocks the size of a sport utility vehicle in Nantucket Sound may redefine the borders of Massachusetts, expanding state waters about 12 square miles. The expansion would push back federal waters, which could imperil a developer's bid to erect the country's first offshore wind farm, 130 turbines in the sound.

The US Minerals Management Service is expected to post a notice about the border change in the Federal Registry by the end of the month, said Jon Carlisle, a spokesman for the Executive Office of Transportation, which oversees state boundaries. State waters stretch 3 miles from where officials draw the border. Federal waters extend from that point to another 200 miles offshore.

"From our review of the landmass, that's the appropriate new border," said Carlisle, who declined to comment on whether Romney pushed for the new borders to curtail the wind project. "Really one thing has nothing to do with another."

Romney and other state politicians, such as Senator Edward M. Kennedy, oppose the project's planned location, but they have limited power to block it if it is entirely within federal waters.

Last July, Romney asked the Army Corps of Engineers to postpone its long-awaited review of the proposed wind farm, arguing the newly discovered rocks might require changing the state border.

If that happened, he suggested in a letter, the developer might have to redraw plans or seek new permits from state agencies. "This may dramatically alter the proposal your agency is currently reviewing," the governor wrote. An Army Corps official dismissed the request at the time as a thinly veiled attempt to stop the project.

While details remained sketchy last night, the new boundary appears to cut into as much as 10 percent of the wind farm's proposed footprint, affecting 10 to 13 turbines, state officials said.

Cape Wind Associates, the project's developer, has seen its proposed turbines become a focal point in a growing national debate over ocean management. A company official said last night that they had not seen the proposal, but that they doubted it would seriously affect the project. The company has already reduced its original proposal by 40 turbines.

A US Army Corps of Engineers draft environmental impact report on the project is in a public comment period until later this month. The Army Corps is expected to make a final ruling on whether the project can be constructed within the next year, the biggest hurdle for Cape Wind must overcome.

"We are going to await receiving this document, and we want to evaluate it closely before we respond," said Mark Rodgers, a Cape Wind spokesman. "At this time, it does not appear this will have any significant impact on the Cape Wind Project."

The effort to change the state's borders began about a year ago, after the Minerals Management Service asked the Massachusetts Highway Department to survey the landmass, which is about 2Â½ miles off Cape Cod, Carlisle said. The Highway Department, which documents state lines, determined the landmass to be a "natural occurrence" and recommended the federal agency change the state's borders, he said.

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February 23, 2005

Bay State gets a bit bigger

By KEVIN DENNEHY
STAFF WRITER

The federal government yesterday granted Massachusetts' request to redraw state boundaries in Nantucket Sound, leaving a corner of a controversial wind farm project in state waters.

Related

- For more on the proposed offshore wind farm projects, see our special resources.
- Locator map of site

According to a federal mapping survey completed last fall, a rocky formation off Yarmouth, called Bull Rock, is now considered the outer edge of the Massachusetts coast. The state controls up to three miles out into the Sound from that point. A couple of weeks ago, state officials requested the redrawn boundary, and jurisdiction over more of the Sound.

Cape Wind Associates, which was careful in its proposal to keep its offshore wind farm in federal waters, will have to relocate about 10 of the 130 wind turbines or face tougher state scrutiny.

The U.S. Army Corps of Engineers is currently deciding whether to issue a permit that would allow Cape Wind to build the turbines on Horseshoe Shoal.

The U.S. Minerals Management Service, which ultimately decides state and federal boundaries, said the new coastal map, which carves 12 square miles of the Sound from federal oversight, had nothing to do with the Cape Wind project.

"It happens to coincide with this issue, but we're doing this (as part of) a nationwide issue," said Gary Strasburg, a spokesman for the agency.

The Minerals Management Service, which is part of the U.S. Department of the Interior, is reassessing state and federal boundaries in each state. Massachusetts is just the first to be completed,

Strasburg said.

Cape Wind officials did not say how the new map would affect their project, although spokesman Mark Rodgers said the company had several options.

The principal regulatory agency is the Army Corps. Currently, state oversight is largely limited to the underwater cable that would link the turbines to the shore.

Increased state involvement in the project could make it a tough sell for Cape Wind. Numerous state officials, including Gov. Mitt Romney and Attorney General Thomas Reilly, are outspoken opponents of the proposal.

(Published: February 23, 2005)

Back to Cape Cod Times

Subject: FW: NOAA Situation/White House Task Force
Date: Tue, 17 Feb 2004 09:22:56 -0500
From: "Golde, Helen" <Helen.Golde@hq.doe.gov>
To: "'carla.sullivan@noaa.gov'" <carla.sullivan@noaa.gov>

Carla-- We should talk about this when you get the chance today.

-- Helen

-----Original Message-----
From: Dennis Duffy [mailto:dduffy@emienergy.com]
Sent: Friday, February 13, 2004 3:35 PM
To: Golde, Helen
Subject: NOAA Situation/White House Task Force

Helen,

As we have discussed, we are very concerned to learn that NOAA seems to be initiating a proposal to shift the Federal/state border in a manner that could possibly affect the jurisdictional status of the Cape Wind project. Our concerned is heightened by the fact that there have been a series of behind-the-scenes political attempts to derail the ongoing permit review process, which is now in its third year. One such attempt was the circulation of a legislative rider that would have shifted our proposed site from Federal to State ownership. Such attempt stalled once it was brought to light, and it now seems odd that a similar initiative would surface within the same timeframe.

We would like to get a meeting with the responsible people at NOAA as soon as possible. We'd also like to see the factual materials and documentation that has been used to support the proposed change of status . I also also want to learn the source of this initiaitve and the extent, if any, that political forces aimed at blocking the windfarm were involved.

Thanks for your help.

Dennis J. Duffy
Cape Wind Associates
617-904-3100, x.112

Subject: more Cape Wind info
Date: Mon, 9 Feb 2004 10:35:22 -0500
From: "Golde, Helen" <Helen.Golde@hq.doe.gov>
To: "'Carla Sullivan'" <carla.sullivan@noaa.gov>,
" (Mike.Aslaksen@noaa.gov)" <Mike.Aslaksen@noaa.gov>

I just spoke with Dennis Duffy at Cape Wind. Here is the scoop on the proposed State waters expansion:

There was an old lighthouse a few miles off of Hyannis, MA called Bishop and Clerks Light. The lighthouse has been destroyed, but there is currently a beacon in the old lighthouse location. This web link includes a picture of the current beacon.

http://www.lighthouse.cc/bishop/history.html

Mr. Duffy has heard that the State of Massachusetts is interested in designating the rock that this beacon sits on as an island, which would expand Mass state waters. This expansion would encompass a significant number of the planned wind turbines in State waters (he wasn't sure how many, but perhaps as many at a quarter of the turbines, which he says might kill the project).

Regarding the meeting on Thursday, he said that the staffer from Sen Chaffee's office had set up the meeting for them, but she will not be attending. They are not coming to discuss RI issues, per se. Attending the meeting on Thursday will be Dennis Duffy (Cape Wind VP), Jim Gordon (Cape Wind Pres.), and Jerry Harrington and Chris Vitale from Capitol City Group (don't hold me to the spelling on any of these guys names). Duffy did say that one of the things he will want to talk about is Mass desire to extend joint planning into Fed waters, which he feels exceeds their authority. He asked me about the people he was scheduled to meet with and when I told him who Eldon Hout is he was glad cause he wants to discuss this issue about Mass state authority under CZMA. (at least that's how I understood it).

You might consider having someone from CO-OPS attend the meeting, as they can address questions about what it would take to have the rock designated as an island, etc.

Hope this helps.

-- Helen

Helen M. Golde

White House Task Force for Energy Project Streamlining

202-586-6554

helen.golde@hq.doe.gov

'NVIRONMENTAL SCIENCE SERVICES, INC.
38 Worcester Street, Suite 240, Wellesley, MA 02482
'81) 431-0500 / Fax (781) 431-7434

LETTER OF TRANSMITTAL

DATE : 04/02/02	PROJECT NO. E159-009.5
PROJECT: Cape Wind	
ATTENTION: Karen Adams	

TO: Karen Adams
US Army Corps of Engineers - NED
696 Virginia Road
Concord, MA. 01742

'E ARE SENDING YOU
] Attached ☐ Under separate cover via _____ the following items:
] Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
] Copy of letter ☐ Change order _____ ☐ Other _____

COPIES	DATE	NO.	DESCRIPTION
1	04/02/02		New England Region Alternative Siting Analysis (Working Draft – Summary)

HESE ARE TRANSMITTED as checked below:

] **Final** ☒ **Draft** ☐ **Draft Internal**
] For approval ☐ Approved as submitted ☐ Resubmit _____
] For your use ☐ Approved as noted ☐ Submit _____
] As requested ☐ Returned for corrections ☐ Return _____
] For review and comment Other:
] For bids due Prints returned after loan to ESS

EMARKS: Karen: Here's the draft "white paper" on the New England Alternative Analysis for Cape Wind. If you feel that it ill be useful in our discussions on Thursday, please let me know and I will bring a supply of copies. Thanks.

OPY TO: _____

SIGNED _____
Terry L. Ort

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CAPE WIND ASSOCIATES, LLC
NEW ENGLAND REGION ALTERNATIVE SITING ANALYSIS

Overview:

The purpose of the proposed Cape Wind Project is to install and operate a commercial scale merchant electrical generating facility located in New England, utilizing renewable wind energy as its fuel source. A New England regional siting analysis was conducted in order to identify potential alternative sites that could accommodate a Project of this type.

Due to large infrastructure and capital costs, the variability of wind energy output, the relatively high cost of operating and maintaining a wind energy project, established constraints on transmission load flow / line capacities, and the economies of scale associated with such a project, Cape Wind Associates (CWA) has determined that the Project must be capable of generating a minimum average output of approximately 170 MW in order for it to be financially sustainable.

Based on this stated purpose and economically viable size / scale, a series of siting criteria were identified, and applied to both onshore and offshore sites throughout New England in order to identify viable alternatives.

Basic Assumptions:

- New England
- Wind Power
- Utility Scale Project (minimum average output of 170 MW)

Primary Siting Criteria:

- Quality of the Wind Resource. A wind power classification of 4 or greater as designated by the US Department of Energy National Renewable Energy Lab (Wind Energy Resource Atlas of the United States – 1986; Figures 1 and 2)
- Suitable available land or offshore area (minimum of 10,000 acres)
- Electrical Connection (New England Geographic Transmission Map through 2015 ISO New England 3-14-00 attached as Figure 3)
  - Proximity to regional load center
  - Proximity to existing transmission infrastructure
  - Available capacity on existing transmission infrastructure

ONSHORE ALTERNATIVES

Upland sites were investigated in areas of New England which were mapped as having a wind power classification of 4 or higher, including western Maine, the mountains of New Hampshire and Vermont, western Massachusetts and the Cape and Islands.

In general the following characteristics apply to onshore wind power installations (as compared with offshore installations):

- Commercially available land and associated acquisition costs, along with other installation costs, must be offset by power output in order to make the project economically feasible.
- Wind shear is greater on land – due to roughness of the landscape – requiring taller towers to reach the quality winds. Taller towers are more visible.
- State of the art (ie: larger) MW machines are difficult to transport into remote / mountainous locations where wind resources tend to be adequate, due to the shear size of the components. Roadways / railway infrastructure in these areas is often limited. Helicopter installation is possible but technically difficult.
- Greater potential impact on birds and wildlife due to greater amounts of land alteration / loss of habitat.

Maine / New Hampshire:
CWA evaluated a number of sites in Maine, and benefited from EMI's knowledge of and experience with the electrical transmission system from their development of the Rumford Generating Plant in Rumford Maine. Sites such as Boundary Mountain were evaluated, but all were considered infeasible primarily due to the lack of electrical transmission infrastructure and capacity to connect to the New England Power Pool. A "bottleneck" exists in southern New Hampshire due to a limited number of high voltage transmission lines with available capacity, so any future power facility built in Maine or New Hampshire lacks the certainty that the power produced could be moved to market due to the congestion at the NH / ME / MA intersection. In addition to the bottleneck entering Massachusetts, the high voltage lines that do exist in Maine and southern New Hampshire are located closer to the coast and away from the mountainous locations that would have any potential for wind power generation.

Vermont:
CWA investigated sites in Vermont, including Searsburg, and conducted partnership discussions with KMS Mountain Energy about potential small scale upland wind projects in the state. Ultimately it was decided that siting a utility scale project in the mountainous areas of Vermont where the wind regime was adequate was not feasible due to the lack of available area, and the impracticality of installation due to infrastructure limitations (limited roads for construction and limited transmission lines to handle power output).

Connecticut and Rhode Island:
The wind resources throughout Connecticut and Rhode Island are not adequate to support a land based commercial wind power project (most of the area is designated as Wind Power Class 2 or 3).

Massachusetts:
Two distinct regions of Massachusetts met the minimum criteria for onshore wind project development. The wind resources in Western Massachusetts, and Cape Cod and the Islands were adequate for further site investigation.

The wind resources in the higher elevations of western Massachusetts are designated as Wind Power Class 4 however project development throughout the area faces similar constraints as those identified in Vermont. CWA investigated sites near Brody Mountain and Mt. Tom, but concluded that upland project development was infeasible due to lack of available land area and the impracticality of installation due to infrastructure limitations.

The Islands of Nantucket and Martha's Vineyard have adequate wind resources however available land area, adequate for a utility scale project, does not exist on either island and capacity is not available over the existing transmission cables to interconnect with the regional transmission grid on Cape Cod.

CWA has investigated project development at the Massachusetts Military Reservation / Otis Air Force Base in Sandwich Massachusetts. Although a significant amount of open space exists on the site that may be adequate for a smaller scale project, the assessment of the site has concluded that it is not feasible for a utility scale project for the following reasons:

- the quality of the wind resource is marginal (class 3) due to topography and existing structures, requiring taller towers that would be more visible and extend further into military airspace;
- the site is in close proximity to residential neighborhoods;
- the Air Force base is undergoing increased military activity and renewal / extension of the National Guard lease;
- there has been increased military air traffic to and from the site since September 2001;
- unexploded ordinance may exist in open areas formerly used for training that would be considered for turbine siting, and
- there are several environmental concerns, including EPA superfund designation.

Based on this analysis and evaluation of upland sites throughout New England, Cape Wind Associates has determined that an onshore utility scale wind power project in the New England area is not practicable.

OFFSHORE ALTERNATIVES

A number of offshore locations were investigated and evaluated prior to the identification of the proposed site in Nantucket Sound. Wind power classifications of 4 or greater exist along the entire New England coastline and sites from Maine to Connecticut were considered.

In general the following characteristics apply to offshore wind power projects (as compared with onshore applications):

- The quality of the wind resource is greater over water than over land due to the relative smoothness of the water surface. As a result there is less wind shear and turbines can be installed on shorter towers.
- Smoother, less turbulent wind results in less wear and tear and longer operational life for wind turbines.
- Use of state-of-the-art megawatt size turbines is practical and not constrained by land based infrastructure limitations, allowing for fewer units to achieve the desired energy generating capacity.
- Offshore turbine foundation installations are more expensive than comparable onshore foundations.
- Operations and maintenance costs are higher for offshore installations.
- Available open areas and land acquisition costs are not limiting factors.
- Projects can be sited further away from population centers, minimizing visual impacts.

Two primary siting considerations for any offshore installation are the water depth and the exposure of the site to open ocean. Both of these factors pose significant design, installation and operational considerations that greatly affect the feasibility of offshore sites (see figure 4).

Water Depth:
As installations are designed for deeper waters the size of the foundation must become both taller and larger in diameter to accommodate the increased stresses that will be placed on it. As water depths increase, the options become more limited as to the type of foundation installation that is technically possible. The driven monopile foundation is practical to an approximate depth of 15 meters (50 feet). It is the most economically feasible and creates the least environmental impact on the seabed.

Deeper water installations will likely require a tripod design that involves three piles widely spread, each of which will require a certain amount of scour protection depending upon the currents and seabed conditions. This design is not only more expensive to construct, but would impact a greater area of seabed than the monopile design, and would have an increased potential for environmental impact.

Sheltered vs. Exposed Locations:
The extent to which a site is exposed to the open ocean impacts the design and operation of the facility. The design of each wind turbine must take into consideration the significant wave height expected for the specific location. Designing for higher wave heights results in increased installation and operation costs and considerations. Locations that are sheltered from the long fetch distances associated with exposed open ocean locations will have much lower significant wave heights.

Access platforms on each turbine need to be located above significant wave height. Platforms are attached to the foundation at the interface with the turbine tower. Exposed locations with higher significant wave heights require taller foundations with shorter towers to achieve the desired hub height. Higher platforms result in fewer opportunities for installation and maintenance due to more frequent hazardous weather conditions.

Generally speaking, most of the exposed offshore sites that are subject to very large significant wave conditions are also areas of deeper waters, thus compounding the design, installation and operation difficulties. For these reasons many offshore areas with substantial wind resources were deemed infeasible.

Maine:
All potential locations off the coast of Maine are completely exposed to the open Atlantic ocean and would be subject to a significant wave design height of 50 feet or greater. Water depths increase rapidly from shore and quickly exceed even the deepest design limits of 50 meters. Judged on these two criteria alone, CWA has determined that installation off the Maine coast is infeasible. Regardless of the difficulties in siting the turbines offshore, the lack of transmission capacity or "bottleneck" described previously in the Onshore Alternatives discussion still exists for any power brought ashore along the Maine / New Hampshire coastline.

Massachusetts:
Installation of electrical power generating plants is specifically prohibited within 3 miles of the Massachusetts coastline (Ocean Sanctuaries Act), so only sites outside of the 3mile limit were evaluated.

Cape Ann to Cape Cod Bay
Sites within this area are deep water, exposed sites which would impact the Boston Harbor Shipping Channel, the Stellwagan Bank National Marine Sanctuary, approaches to Logan Airport, and significant marine mammal migratory routes. Wind resources in this area are classified as Class 6; however, due to the reasons stated previously, this area is infeasible for project development.

East of Monomoy

This area has some of the highest wind resources in New England (class 6); however, any development would be subject to deep water, open ocean exposures with significant wave design heights of 50 feet or greater. In addition, the main north – south marine shipping lane to Boston Harbor passes through the area, and it is critical habitat for the Northern Right Whale. Electrical interconnection to the New England power grid would require significant upland infrastructure improvements to the system in the Chatham area, or impractically long cable runs into Nantucket Sound with landfall on the south shore of Cape Cod. As a result, installation in this area is infeasible.

Nantucket Sound

Nantucket Sound is sheltered from the long fetch distances and open ocean exposures and is subject to significant wave design height of approximately 12 feet. The wind resources in the Sound are higher than most coastal areas of the contiguous United States (wind class 5), and the Sound has areas of relatively shallow water depth, outside the 3 mile limit of the Ocean Sanctuaries Act. Areas in Nantucket Sound are within reasonable distances to electrical interconnection with the New England transmission grid through high voltage lines on Cape Cod. Nantucket Sound was deemed to be a feasible and practicable location for project development. For further siting evaluation within Nantucket Sound, refer to Section 4.0 (Alternatives Analysis) in the 11/21/01 US Army Corp of Engineers Section 10/404 Individual Permit Application.

Nantucket Shoals

Areas southeast of Nantucket Island have many of the same characteristics as those East of Monomoy, with the exception that shallower water depths occur throughout the extremely variable geographic area. The area's direct exposure to the open Atlantic ocean presents a significant wave design height of 50 feet or greater, which even in shallower waters would require deeper installation of larger foundations and would result in operations and maintenance limitations that have been previously described. Electrical interconnection directly to the Cape Cod mainland is impractical due to distance, and interconnection through Nantucket via the existing 46kV submarine cable to Harwich is infeasible due to size, design and capacity constraints. CWA has analyzed installation in this area and has found it to be infeasible.

Rhode Island Sound

Areas south and west of Martha's Vineyard have lower quality wind resources (wind classes 3-4), than most other locations along the New England coastline. Sites in this area are exposed, deepwater sites, and would impact the Buzzard's Bay Traffic lane and the Narragansett Bay Traffic lane. In addition, an excessive amount of unexploded ordinance exists in the area south of No Man's Land, and

interconnection distances would be substantial. Project development in this area is considered infeasible.

Long Island Sound

The wind resources within Long Island Sound are wind power class 3 and considered inadequate for development of a utility scale wind project.